Meridian 1

What's New for Meridian 1

Document Number: 553-3001-015
Document Release: Standard 1.00
Date: January 2002

Copyright © 2002 Nortel Networks
All Rights Reserved

Printed in Canada

Information is subject to change without notice. Nortel Networks reserves the right to make changes in design or components as progress in engineering and manufacturing may warrant. This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC rules, and the radio interference regulations of Industry Canada. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

Meridian 1 is a trademark of Nortel Networks.

Revision history

January 2002

Standard 1.00. This document is issued to explain the new features in Meridian 1 Release 25.40.

Contents

Contents 5
Release 25.3 Features 7
BRI Trunks with Night Service Enhancement . . . 9
Corporate Directory 17
Option 11C with IP Connectivity 21
Scheduled Electronic Lock 25
CP PII Software Upgrade 33
Release 25.40 Features 57
ACD DN/CDN Expansion 59
Attendant Announcement 63
Clock Controller Description and Installation . . . 83
CPP Memory Enhancement 111
i2050 Software Phone 157
Internet Telephony Gateway Line 2.2 205
M3900 Phase III 213

Network Break-in and Force Disconnect 233

NI-2 B-channel Service Messaging 253

NI-2 Name Display Supplementary Service 261

System Access Security 273

QSIG Message Waiting Indication Supplementary Service 291

Redirecting Name Display Enhancement for QSIG Call Rerouting 299

SDID Number as CLID for EuroISDN Trunks 301

Singapore ISDN Restart Message Enhancement 307

Software Input/Output prompts 309

System Messages 337

Release 25.3 Features

This section describes the features introduced in Meridian 1 Release 25.30 software. The features include:

- Corporate Directory
- CP PII Software Upgrade
- BRI Trunk with Night Service Enhancement
- Scheduled Electronic Lock
- Survivable IP Expansion

This section also includes administration prompts, maintenance commands, and system message updates for Meridian 1 Release 25.30.

BRI Trunks with Night Service Enhancement

Contents

The following are the topics in this section:

Reference list 9
Feature description 9
Night Service Enhancement for BRI Trunks 10
Operating parameters 11
Feature interactions 12
Feature packaging 12
Feature implementation 12
Task summary list 12
Feature operation 15

Reference list

The following is the reference in this section:

- Night Service and Night Service Enhancements feature modules in *Features and Services* (553-3001-306)

Feature description

ISDN BRI consists of two 64Kb/s Bearer (B) channels, and one 16Kb/s Data (D) channel. The BRI interface is referred to as a 2B+D connection as well as a Digital Subscriber Loop (DSL).

B-channels transmit user voice and data information at high speeds, while D-channels are packet-switched links that carry call set-up, signaling and other user data across the network.

One single DSL can carry two simultaneous voice or data conversations, to the same or to different locations. In either case, the D-channel can also be used for packet communications to a third location simultaneously. The two B-channels can also be combined for transmitting data at uncompressed speeds of up to 128 Kb/s.

A wide range of devices and telephone numbers can be associated with a single DSL, to offer equipment flexibility and reductions in line, wiring and installation costs.

Night Service Enhancement for BRI Trunks

Night Service Enhancement for BRI Trunks enhances the functionality of the Night Service feature. Night Service allows calls that are normally directed to the attendant to be routed to another defined destination. With the Night Service Enhancement for BRI Trunks feature, a Night Service DN (NITE) or Night Service Group number (NGRP) can be defined for BRI trunks.

The Night Service Enhancement for BRI Trunks feature introduces the NITE and NGRP prompts for Overlay 27.

The NITE prompt appears in Overlay 27 when the following conditions apply:

- Enhanced Night Service is disabled (ENS = NO) in Overlay 15.
- Auto Terminate is disabled (AUTO = NO) in Overlay 16.
- The BRI trunk is defined as a Direct Inward Dialing (DID) or Central Office (COT) trunk in Overlay 27.

The NGRP prompt appears in Overlay 27 when the following conditions apply:

- Enhanced Night Service is enabled (ENS = YES) in Overlay 15.
- Auto Terminate is disabled (AUTO = NO) in Overlay 16.
- The BRI trunk is defined as a DID or CO trunk in Overlay 27.

The Auto Terminate DN (ATDN) prompt appears in Overlay 14 when the following conditions apply:

- Auto Terminate is enabled (AUTO = YES) in Overlay 16.
- The BRI trunk is defined as a DID, CO, or TIE trunk in Overlay 27.

  Note: In this case, neither the NITE prompt nor the NGRP prompt appears in Overlay 27.

Operating parameters

Support for ISDN BRI applies to Meridian 1 Release 25.40 and later.

Meridian 1 BRI connectivity supports two interface standards:

- S/T Interface Line Card (SILC)
- U Interface Line Card (UILC)

The S/T Interface Line Card (SILC) and the U Interface Line Card (UILC) can reside in Media Gateway and Media Gateway Expansion.

With the Night Service Enhancement feature, you can enter a Group Hunt Pilot DN as the Night Service DN.

You cannot assign a BRIL DN to the night station.

The Night Service DN defined in Overlay 27 takes precedence over the Customer Night DN defined in Overlay 15.

The NITE or NGRP prompt appears for each B-channel. You can enter different Night DNs for each B-channel.

If you enter B2 = NO for the configuration of the second B-channel, the Night DN or Night Service Group number that you entered for the first B-channel (BI) is used.

If the definition for the ENS prompt is changed from NO to YES while Night Service is in effect, the system verifies that the Night number defined is a group number or a DN. If a Night DN or 0000 is defined, the existing Night DN, defined in Overlay 15, is used.

Feature interactions

For line access, Meridian 1 BRI is compliant with CCITT, ANSI, ETSI NET-3 (EuroISDN), INS NET-64 (Japan D70), National ISDN-1, 1TR6, Numeris VN2, and EuroISDN standards.

Meridian 1 BRI trunks connect to local exchanges that support Numeris VN3, 1TR6, ETSI NET-3 (EuroISDN), INS NET-64 (Japan D70), and Asia-Pacific protocols.

For Night Service and Night Service Enhancements feature modules refer to *Features and Services* (553-3001-306) for feature interactions.

Feature packaging

The Night Service Enhancement for BRI Trunks feature requires the following packages:

- Enhanced Night Service (ENS) package 133, in order for the NGRP prompt to appear
- Integrated Services Digital Network (ISDN) package 145
- Primary Rate Access (PRA) package 146
- 2.0 Mb/s Primary Rate Interface (PRI2) package 154
- International Primary Rate Access (IPRA) package 202
- Basic Rate Interface (BRI) package 216
- Integrated Services Digital Network Basic Rate Interface Trunk Access (BRIT) package 233
- Basic Rate Interface Line Application (BRIL) package 235

Feature implementation

Task summary list

The following is a summary of the tasks in this section:

1 LD 27 - define a Night Service DN when ENS is disabled in Overlay 15.

2 LD 27 - define a Night Service Group number when ENS is enabled in Overlay 15.

LD 27 – Define a Night Service DN when ENS is disabled in Overlay 15.

Prompt	Response	Description
REQ	CHG	Change existing data.
TYPE	DSL	Digital Subscriber Loop Data Block
DSL	c dsl	Digital Subscriber Loop address
APPL		Application type for this DSL
	BRIE	Basic Rate Interface protocol engine BRIE supports the QSIG and EuroISDN interfaces, and requires BRIT package 233. Any changes in the DSL route must match the BRIE loadware application.
	BRIT	Basic Rate Interface Trunk BRIT supports SL-1, Numeris, and ITR6 interfaces. BRIT package 233 is required.
...		
TKTP		Trunk Type
	DID COT	Direct Inward Dialing trunk type Central Office trunk type
PRID	1 - 4	Protocol ID
PDCA	1 - 16	Pad Category table, as defined in Overlay 73
ROUT	0 -511	Route number for the Trunk DSL.
...		
B1	YES	Change B-channel 1 configuration

Prompt	Response	Description
NITE	x...x	Night Service Directory Number This DN can have up to four digits, or up to seven digits with Directory Number Expansion (DNXP) package 150. You can enter a Group Hunt Pilot DN at this prompt. The DN that you enter here takes precedence over the NITE and NIT1-NIT4 prompts in LD 15. If you enter a DN at this prompt, calls will go to this DN. If you do not enter a DN at this prompt, calls will go to the DNs defined at the NITE prompts in LD 15.
TGAR	0-(1)-31	Trunk Group Access Restriction number
...		
B2	YES	Change B-channel 2 configuration
NITE	x...x	Night Service Directory Number This DN can have up to four digits, or up to seven digits with Directory Number Expansion (DNXP) package 150. You can enter a Group Hunt Pilot DN at this prompt. The DN that you enter here takes precedence over the NITE and NIT1-NIT4 prompts in LD 15. If you enter a DN at this prompt, calls will go to this DN. If you do not enter a DN at this prompt, calls will go to the DNs defined at the NITE prompts in LD 15.

LD 27 – Define a Night Service Group number when ENS is enabled in Overlay 15.

Prompt	Response	Description
REQ	CHG	Change existing data.
TYPE	DSL	Digital Subscriber Loop Data Block
DSL	c dsl	Digital Subscriber Loop address

Prompt	Response	Description
APPL		Application type for this DSL
	BRIE	Basic Rate Interface protocol engine BRIE supports the QSIG and EuroISDN interfaces, and requires BRIT package 233. Any changes in the DSL route must match the BRIE loadware application.
	BRIT	Basic Rate Interface Trunk BRIT supports SL-1, Numeris, and ITR6 interfaces. BRIT package 233 is required.
...		
TKTP		Trunk Type
	DID COT	Direct Inward Dialing trunk type Central Office trunk type
...		
B1	YES	Change B-channel 1 configuration.
NGRP	0 - 9	Night Service Group number The NGRP prompt replaces the NITE prompt when ENS = YES in LD 15.
TGAR	0-(1)-31	Trunk Group Access Restriction number
...		
B2	YES	Change B-channel 2 configuration.
NGRP	0 - 9	Night Service Group number The NGRP prompt replaces the NITE prompt when ENS= YES in LD 15.

Feature operation

Refer to the Night Service and Night Service Enhancements feature modules in *Features and Services* (553-3001-306) for Night Service and Night Service Enhancements feature operation.

Corporate Directory

Contents

This section contains information on the following topics:

Feature description 17
Operating parameters 18
Feature implementation 19
Feature operation 20

Reference list

The following is a reference for this section:

M3900 Series Meridian Digital Telephones Description, Installation and Administration (553-3001-216)

Feature description

The M3903 and M3904 telephones provide access from the telephone to a corporate wide directory. The Corporate Directory is accessed through the Applications Key. The Corporate Directory allows users to:

- search by name
- view additional information on each entry
- dial from the Corporate Directory
- copy and paste an entry into the Personal Directory (M3904)
- view an alphabetical listing of entries by using the last names (system generated)

Note: When names are copied to the Personal Directory (M3904) the names are listed by first name.

- the system administrator to configure Meridian Administration Tools (MAT) to download the directory database manually or automatically to the system

Operating parameters

The user must have an M3903 or M3904 telephone to support the Corporate Directory feature. To access the Corporate Directory from the telephone, the user must have the Corporate Directory class-of-service enabled.

When the Corporate Directory is being updated with new data, the user cannot access the Corporate Directory. The user exits the Corporate Directory by pressing the Quit Key or the Applications Key.

The MAT Corporate Directory utility gathers data from the MAT databases and downloads it to the Meridian 1 system. To use the Corporate Directory utility, MAT 6.6 or later must be installed.

Feature implementation

LD 11 – Add Corporate Directory to a M3903 telephone

Prompt	Response	Description
REQ:	CHG	Change current data.
TYPE:	3903	Add Corporate Directory feature to a M3903 telephone
...	...	...
CLS	ADD	Automatic Digit Display
	(VCE)	Voice Terminal DTA = Data Terminal
	FLXA	Flexible Voice/Data Allowed Deny Flexible voice/data (FLXD) is the default
		Class of Service must be VCE, FLXA if telephone is equipped with the optional Analog Terminal Adapter.
	CRPA	Corporate Directory Allowed Deny Corporate Directory (CRPD) is the default.

LD 11 – Add Corporate Directory to a M3904 telephone

Prompt	Response	Description
REQ:	CHG	Change current data.
TYPE:	3904	Add Corporate Directory feature to a M3904 telephone.
...	...	...
CLS	ADD	Automatic Digit Display
	(VCE)	Voice Terminal DTA = Data Terminal
	FLXA	Flexible Voice/Data Allowed Deny Flexible voice/data (FLXD) is the default
		Class of Service must be VCE, FLXA if telephone is equipped with the optional Analog Terminal Adapter.
	CRPA	Corporate Directory Allowed Deny Corporate Directory (CRPD) is the default.

Feature operation

To initiate a call within the Corporate Directory, using the first available DN, follow these steps:

1. Access the Corporate Directory using the **Applications** key.
2. Select a Corporate Directory entry.
3. Press the **Dial** soft key.

To initiate a call within the Corporate Directory using a pre-selected DN, follow these steps:

1. Pre-select a DN before or after entering the Corporate Directory. Pre-selecting a DN is accomplished by lifting the handset, selecting a DN key or by using Transfer or Conference if on an existing call.
2. Access the Corporate Directory using the **Applications** key.
3. Select a Corporate Directory entry.
4. Press the **Dial** soft key.

Refer to the *M3900 Series Meridian Digital Telephones Description, Installation and Administration* (553-3001-216) for specific key functions.

Option 11C with IP Connectivity

Contents

This section contains information on the following topics:

Option 11C with IP Connectivity 21
Survivable IP Expansion Cabinets 23
Voice Distribution over Campus Data Network 23
Support of Option 11C Mini Cabinetry 23
Package Requirements 24

Reference list

The following are references for this section:

- *Option 11C Planning and Installation* (553-3021-210)
- *Option 11C and 11C Mini Fault Clearing Guide* (553-3011-500)
- *Option 11C and 11C Mini Central Answering Position Guide* (553-3011-320)
- *Option 11C and 11C Mini Customer Controlled Backup and Restore Guide* (553-3011-330)
- *Option 11C and 11C Mini Upgrade Procedures Guide* (553-3021-250)
- *Option 11C Survivability Guide* (P0919734)

Option 11C with IP Connectivity

Option 11C IP Expansion provides IP interconnection between Option 11C main and expansion cabinets. This IP interconnection enables:

- Increased Digital Trunking Capacity

- Survivable Expansion Cabinets
- Voice Distribution over Campus Data Network

The solution is applicable to Option 11C and Option 11C Mini systems.

Increased Digital Trunking/SDI Capacity

This development provides increased networking capacity for the Option 11C and Option 11C Mini systems. Digital trunks can now be supported in any IP Expansion Cabinet or Mini main chassis, when connected via 100BaseT or 100BaseF. A total of 45 digital trunks could be supported on Option 11C, and 15 digital trunks supported on Mini.

The following CE cards can now be supported in IP expansion cabinets/mini main chassis.

- 1.5MB DTI/PRI (NTAK09 with NTAK20, NTAK93 & NTBK51)
- 1.5MB TMDI (NTRB21 with NTAK20)
- 2.0MB DTI (NTAK10 with NTAK20)
- 2.0MB PRI (NTAK79 & NTAK50 with NTAK20, NTAK93 & NTBK51)
- SDI DCH (NTAK02) (Only DCH is supported in the IP Expansion cabinet/chassis. ESDI, AML, TTY are not supported in the Expansion cabinet/chassis.)

IP expansion daughterboards also provides increased SDI/D-channel capacity. Three SDI ports are provided with each IP Expansion chassis and D-channel capacity has been increased, such that a total of 80 D-channels are now supported per system.

Option 11C IP Expansion introduces two types of IP daughterboards:

- 100BaseT IP daughterboard
- 100BaseF IP daughterboard

These boards are available in single and dual port versions. The dual port IP daughterboard connects to the SSC of a Main cabinet and supports connections to two expansion cabinets, each equipped with an SSC, via IP. The single port IP daughterboard is used at the IP Expansion to provide connectivity back to the Main.

The Option 11C SSC card can accommodate up to two single or dual port IP daughterboards. The IP daughterboards can coexist with either the single port or dual port fibre daughterboards.

Survivable IP Expansion Cabinets

IP Expansion Cabinets can be configured to be survivable in the event of a link failure, or a catastrophic failure of the main cabinet.

Based on the system configuration, if IP connectivity to the main is lost or a manual command is issued, an IP expansion cabinet can enter survival mode in which it acts as a fully functional "Stand-alone" Option 11C.

The number of survivable expansion cabinets allowed on a specific system is controlled via a new ISM parameter, "Survivability", which has a range of 0-4. The default value for this ISM parameter is zero.

Voice Distribution over Campus Data Network

The IP Connectivity of expansion cabinets enables a high capacity, cost effective solution to distribute Option 11C and Mini cabinets over a high performance data network.

Full feature functionality, and non blocking architecture is maintained when Option 11C systems are distributed over high performance data networks. This patented solution delivers the exceptional functionality and reliability of Meridian 1 Option 11C, while delivering the benefits of voice/data convergence.

Support of Option 11C Mini Cabinetry

This aspect of Option 11C IP Expansion allows the software functionality described above to be supported on the Option 11C Mini platform as well as the Option 11C platform.

A mix and match strategy allows a mixture of both Option 11C's and Mini chassis within the same system.

Package requirements

IP Connectivity is packaged under package number 295. If the IP Expansion package is restricted, IP connectivity between the Main and IP Expansions will be disallowed, regardless of whether or not IP daughterboards are connected to the Main. CE-Mux Expansion is not separately packaged, but is dependent on package number 295.

Scheduled Electronic Lock

Contents

The following are the topics in this section:

Feature description 25
Operating parameters 26
Feature interactions 27
Feature packaging 28
Feature implementation 28
Task summary list 28
Feature operation 32

Feature description

Scheduled Electronic Lock (SELK) enhances the Electronic Lock feature.

The Scheduled Electronic Lock feature automatically locks telephones at predetermined times. These times are defined in the Scheduled Access Restrictions (SAR) database (Overlay 88). SAR group numbers are also defined in LD 88. A maximum of eight scheduled lock times can be assigned to each group.

Each telephone that requires Scheduled Electronic Lock functionality must be assigned to a SAR group in Overlay 10 or 11, and must have the Scheduled Electronic Lock Allowed (SLKA) Class of Service assigned.

In order to override the Scheduled Electronic Lock feature, the user must use the existing Electronic Lock feature. The user enters the Electronic Lock Deactivated (ELKD) Flexible Feature Code (FFC). The telephone remains unlocked until the user dials the Electronic Lock Activated (ELKA) FFC. If the user does not dial the ELKA FFC, the system automatically locks the telephone at the next scheduled lock time. For the telephone to be unlocked again, the user must dial the ELKD FFC to unlock the telephone. The telephone does not automatically unlock.

A special dial tone, defined in Overlay 56, notifies the user that the telephone is in a locked state.

Scheduled Electronic Lock Example

The Scheduled Electronic Lock is scheduled for 18:00, 24:00, 02:00. At 22:00, an employee who is working overtime needs to use their telephone. That person enters the ELKD FFC on the telephone to unlock it. At 24:00, the telephone automatically locks, if it has not already been locked by the user. To use the telephone again, the employee must unlock it. At 02:00, the next scheduled lock time, the telephone locks once more. The Scheduled Electronic Lock feature remains in effect until the employee unlocks the telephone by dialing the ELKD FFC.

Operating parameters

The Scheduled Electronic Lock feature supports analog (500/2500 type) telephones, Nortel Networks Internet Telephones, and digital telephones on Remote Office.

The Scheduled Electronic Lock feature does not support ACD telephones, trunks, or PC Attendant.

If a telephone does not support the SAR and Electronic Lock features (for example, ACD telephones), then it will not support the Scheduled Electronic Lock feature.

If the Class of Service (CLS) is set to Scheduled Electronic Lock Deactivated (SKLD) in Overlays 10 and 11, the existing Electronic Lock and SAR feature functionality apply.

When the Scheduled Electronic Lock feature is active, it does not take the Controlled Class of Service (CCOS) restriction from Overlay 15. Configuration is done in Overlay 88.

When a telephone is unlocked, CCOS restrictions (if active) override normal telephone restrictions. When the Scheduled Electronic Lock feature is active, the Scheduled Access Restrictions override the CCOS restrictions.

If the system is busy the Scheduled Electronic Lock feature could be slightly delayed. In this case, it is possible that a user could still dial an external number after the beginning of a scheduled lock time.

Feature interactions

Automatic Call Distribution

The Scheduled Electronic Lock feature does not support Automatic Call Distribution (ACD) telephones, as CCOS does not support ACD telephones.

Direct Inward System Access

Direct Inward System Access (DISA) numbers are not assigned to Scheduled Access Restrictions groups, so they are not affected by the SELK feature.

Electronic Lock Network Wide / Electronic Lock on Private Lines

The SELK feature supports Electronic Lock Network Wide / Electronic Lock on Private Lines. However, a scheduled lock is not supported over a network. Scheduled Electronic Lock must be configured and administered locally. Like SELK, these features obtain their restrictions from Scheduled Access Restrictions.

Message Intercept

When SELK locks a telephone, Message Intercept (MINT) provides a different dial tone or announcement while the telephone is locked.

Multi Tenant Service

If Scheduled Access Restrictions are applied to a tenant, the telephones in that tenant group follow the Scheduled Access Restrictions (unless the telephone belongs to a different SAR group).

Scheduled Access Restrictions

The Scheduled Access Restrictions (SAR) Permanent Disable, Active Lock, and Lock Disable FFCs have precedence over SELK.

Feature packaging

Scheduled Electronic Lock requires the following packages:

- Controlled Class of Service (CCOS) package 81
- Flexible Feature Code (FFC) package 139
- Scheduled Access Restrictions (SAR) package 162
- Message Intercept (MINT) package 163, if the Message Intercept function is required

Feature implementation

Task summary list

The following is a summary of the tasks in this section:

1 LD 88 – Configure the Scheduled Access Restrictions data block.

2 LD 10 – Configure the Scheduled Electronic Lock feature on an analog (500/2500 type) telephone.

3 LD 11 – Configure the Scheduled Electronic Lock feature on an Internet Telephone or digital telephone on Remote Office.

4 LD 57 – Define Flexible Feature Codes for Scheduled Electronic Lock.

LD 88 – Configure the Scheduled Access Restrictions data block.

Prompt	Response	Description
REQ	NEW CHG	Create data block. Change existing data block.
TYPE	SAR	Scheduled Access Restrictions.
CUST	xx	Customer number.

SPWD	xxxx	Secure data password (same password as defined for DISA on a per customer basis in LD 15). ***Note:*** This prompt does not appear to a user with an LAO password.
SGRP	0-999	Scheduled Access Restrictions group number.
OFFP	1-8	Off-hour period number. Off-hour periods can overlap; the period that starts first has priority until that off-hour period is finished. All the prompts shown up to the ICR prompt repeat until you enter <CR>.
	<CR>	Go to the ICR prompt.
- STAR hh mm	hh mm	Start time. The current start time (hours and minutes) is printed individually after the prompt. Respond with the new start time.
- STOP hh mm	hh mm	Stop time. The current stop time (hours and minutes) is printed individually after the prompt. Respond with the new stop time.
- DAYS	d ... d	Respond with a new set of days to be used. Maximum of seven entries in the range of 1-7. Day 1 = Sunday, Day 2 = Monday, etc.
- COS		Off-hour period Class of Service.
	(UNR)	Unrestricted
	CTD	Conditionally Toll-Denied
	CUN	Conditionally Unrestricted
	FR1	Fully Restricted Class1
	FR2	Fully Restricted Class 2
	FRE	Fully Restricted
	SRE	Semi-restricted
	TLD	Toll Denied
- TGAR	0-(1)-15	Trunk Group Access Restriction.
- NCOS	0-99	Network Class of Service.
ICR	(NO) YES	Incoming Calls are Restricted.
LOCK	(1)-8	Indicates off-hour period to be used as the LOCK period. Default is Period 1.

LD 10 – Configure the Scheduled Electronic Lock feature on an analog (500/2500 type) telephone.

Prompt	Response	Description
REQ:	NEW	Add new data.
TYPE:	500	Analog (500/2500 type) telephone.
TN	c u	Terminal Number.
DES	x...x	ODAS Station Designator.
CUST	xx	Customer number.
...		
SCPW	xxxx	Station Control Password. SCPL must be configured in LD 15.
SGRP	(0)-999	Scheduled Access Restriction group number. Must have group defined in LD 88.
...		
CLS	CCSA	Controlled Class of Service Allowed. CCSD = Controlled Class of Service Denied (default).
	SLKA	Scheduled Electronic Lock Allowed. SLKD = Scheduled Electronic Lock Denied (default).

LD 11 – Configure the Scheduled Electronic Lock feature on an Internet Telephone or digital telephone on Remote Office.

Prompt	Response	Description
REQ:	NEW	Add new data.
TYPE:	aaaa	Digital telephone or Internet Telephone on Remote Office. aaaa = 2006, 2008, 2009, 2016, 2018, 2112, 2216, 2317, 2616, 3901, 3902, 3903, 3904, 3905.
TN	c u	Terminal Number.
DES	x...x	ODAS Station Designator.

CUST	xx	Customer number.
...		
SCPW	xxxx	Station Control Password. SCPL must be configured in LD 15.
SGRP	(0)-999	Scheduled Access Restriction group number. Must have group defined in LD 88.
...		
CLS	CCSA	Controlled Class of Service Allowed. CCSD = Controlled Class of Service Denied (default).
	SLKA	Scheduled Electronic Lock Allowed. SLKD = Scheduled Electronic Lock Denied (default).

LD 57 – Define Flexible Feature Codes for Scheduled Electronic Lock.

Prompt	**Response**	**Description**
REQ	NEW CHG	Add new data. Change existing data.
TYPE	FFC	Flexible Feature Code.
CUST	xx	Customer number.
FFCT	(NO) YES	Provide FFC confirmation tone.
CODE	ELKA	New/change Electronic Lock Activate FFC.
ELKA	xxxx	Enter the new or changed Electronic Lock Activate FFC.
CODE	ELKD	New/change Electronic Lock Deactivate FFC.
ELKD	xxxx	Enter the new or changed Electronic Lock Deactivate FFC. ELKD must be different than ELKA.

Feature operation

During the period that a telephone is locked, the user must enter the ELKD FFC to unlock the telephone. The telephone remains unlocked until either the user dials the ELKA FFC to manually lock the telephone or the next scheduled lock occurs.

CP PII Software Upgrade

Contents

This section contains information on the following topics:

Feature description 34

Perform parallel reload 34

- Back up current data 34
- Check the status of the hardware 35
- Check that Core 0 is active 35
- Split the Cores 35
- Install the software on Core/Net 1 36
- Transfer call processing from Core/Net 0 to Core/Net 1 39
- Test Core/Net 1 39
- Install software on Core/Net 0 40
- Enable system redundancy 43
- Test Core/Net 1 and Core/Net 0 44
- Perform a data dump 45

Back out of a system software upgrade 28

- Split the Cores 46
- Install the software on Core/Net 1 46
- Transfer call processing from Core/Net 0 to Core/Net 1 50
- Test Core/Net 1 50
- Install software on Core/Net 0 50
- Enable system redundancy 54
- Test Core/Net 1 and Core/Net 0 55
- Perform a data dump 56

Reference list

The following are references for this section:

- *Call Processor PII/Fiber Network Guide*
  System and Software Upgrade Guide (P0914248)
- *Call Processor PII*
  Description, Installation and Administration Guide (P0914249)

Feature description

The latest release of system software is shipped with new Meridian 1 systems.

Task summary

1 "Perform parallel reload" on page 34.

2 "Back out of a system software upgrade" on page 45.

To better understand the process, read through the instructions before you begin and refer to the *Call Processor PII Description, Installation and Administration Guide* (P0914249).

Perform parallel reload

You must install the system software on both Core hard drives. Follow the tasks below in order to complete the installation.

Note: To complete these procedures, the system must be working and connected to a terminal.

Back up current data

1 Load the Equipment Data Dump Program (LD 43). At the prompt, enter

LD 43	Load the program.

2 When "EDD000" appears on the terminal, enter

EDD	Begin the data dump.

3 When "DATABASE BACKUP COMPLETE" or "DATADUMP COMPLETE" appears on the terminal, enter

****	Exit the program.

CAUTION
If the data dump is not successful, do not continue; contact your technical support organization. Correct any data dump problem before you continue.

Check the status of the hardware

1 Load LD 137 to check the status of the hard disks.

LD 137	
STAT	Get the status of the hard disks.
TEST CMDU	Perform hard and floppy disk test.

2 Load LD 135 and check the status of the CPs, CNIs and memories.

LD 135	
STAT CPU	Get the status of both CPs and memory.
STAT CNI	Get the status of all configured CNIs.

Check that Core 0 is active

Check that Core 0 is active.
If Core 1 is active, make Core 0 active:

LD 135	
STAT CPU	Get the status of the CPUs.
SCPU	Switch to Core 0 (if necessary).

Split the Cores

From the active side, split the cores:

LD 135	
SPLIT	Enter Split on the active core.
****	Exit program.

The system is now in split mode.

Install the software on Core/Net 1

1 Install the CD-ROM into the CD-ROM drive in the MMDU:

   a. Press the button on the CD-ROM drive to open the CD-ROM disk holder.

   b. Place the CD-ROM disk into the holder with the disk label facing up. Use the four tabs to secure the CD-ROM drive.

   c. Press the button to close the CD-ROM disk holder.
   Do not push the holder in by hand.

   Note: If the CD-ROM is not in the CD-ROM drive, the installation will not continue. Insert the CD-ROM to continue.

2 Place the CP PII Install floppy disk into the MMDU floppy drive.

   Note: If a problem is detected during the system verification. Install stops, prints an error message, and aborts the installation.
   If the verification is not successful, do not continue; contact your technical support organization.

3 Press the RESET button on CP PII. Before the install menu runs, the system validates hard disk partitioning which takes about five minutes. The screen displays:

```
Testing partition 0
        0 percent done...1 percent done.....99 percent done....100
        percent done
Testing partition 1
        0 percent done...1 percent done.....99 percent done....100
        percent done
Testing partition 2
        0 percent done...1 percent done.....99 percent done....100
        percent done completed!
Disk physical checking is completed!
There are 3 partitions in disk 0:
The size of partition 0 of disk 0 is XX MB
The size of partition 0 of disk 0 is XX MB
The size of partition 0 of disk 0 is XX MB
Disk partitions and sectors checking is competed!
```

4 From the terminal, press <cr> to start the software installation.

5 When prompted, remove the CP PII Install Program diskette and insert the Keycode diskette.

<a> Continue with keycode validation.

<y> Confirm that the keycode matches the CD-ROM release.

6 When the screen displays the Install Menu, select the following options in sequence when you are prompted to do so:

<a> Install software.

<a> Verify that the CD-ROM is now in drive.

The Installation Status Summary screen appears that lists the options to be installed.

<y> Start Installation.

<a> Continue with Upgrade.

7 Select a PSDL file to install. The PSDL file contains the loadware for all downloadable cards in the system and loadware for M3900 series telephones.

Select one of the six psdl files

<1> Global 10 Languages <default>

<2> Western Europe 10 Languages

<3> Eastern Europe 10 Languages

<4> North America 6 Languages

<5> Rls xx up-issue where xx = current version

<6> North America 6 Languages:

The languages contained in each selection are outlined as follows:

1 English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian, Portuguese, Finnish, Japanese Katakana.

2 English, French, German, Spanish, Swedish, Norwegian, Danish, Finnish, Italian, Brazilian Portuguese.

3 English, French, German, Dutch, Polish, Czech, Hungarian, Russian, Latvian, Turkish.

4 English, Spanish, French, Brazilian Portuguese, Japanese Katakana, German.

5 English, French, German, Spanish, Swedish, Italian, Norwegian, Portuguese, Finnish, Japanese Katakana.

6 English, French, German, Spanish, Brazilian Portuguese, Japanese Katakana.

8 Continue with ROM upgrade when prompted.
Select a database to install.

<cr> Enter carriage return to continue.

<a> Continue with CP BOOTROM installation.

<a> Install the CP BOOTROM from hard disk.

<a> Start installation.

<a> Continue with ROM upgrade.

The Installation Status Summary screen appears. Verify that CD to disk, disk to ROM, and CP-BOOTROM were installed.

<cr> Continue.

<q> Quit.
Remove any diskettes and the CD-ROM from the MMDU drives.

<y> Confirm quit.

<a> Reboot the system.

9 The system automatically performs a sysload: several message appear on the system terminal. Wait for “DONE” and then “INI” message to display before you continue.

While the sysload is being performed, database conversion occurs.

Verify that the following message appears on the system terminal:

DATA CONVERSION
RELEASE 25.XX TO RELEASE 25.XX

10 Confirm that Release 25 software is installed and is working on Core/Net 1:

LD 135 Load the program.

STAT CPU Display the CPU status.

STAT CNI Display the cCNI status.

Check for peripheral software download

Use LD 22 and print the Target peripheral software version. (You printed the Source peripheral software version during the pre-conversion procedure.)

If there is a difference between the Source and Target peripheral software version, a forced download occurs during initialization when coming out of parallel reload. System initialization will take longer and established calls on IPE will be dropped.

LD 22	
REQ	Print.
TYPE	PSWV.
ISSP	Print issue and release.
TID	Print Tape ID.
SLLP	Print System and patch information.
	Print auxiliary ID.
****	Exit program.

Transfer call processing from Core/Net 0 to Core/Net 1

CAUTION

The following procedure to transfer call processing can cause service interruptions.

Time your procedure to minimize the effect of any breaks in service.

From Core/Net 0, the active side, transfer call processing to Core/Net 1:

LD 135	Load the program.
CUTOVR	The inactive CP become active.

Call processing is now switched from Core/Net 0 to Core/Net 1.

Test Core/Net 1

Test Call Processing. This includes, but is not limited to the following:

1 Check for dial tone.

2 Make internal, external, and network calls.

3 Check attendant console activity.

4 Check DID trunks.

5 Check any auxiliary processors.

Note: From this point forward you are upgrading Core/Net 0 with new software.

Install software on Core/Net 0

1 Install the CD-ROM into the CD-ROM drive in the MMDU:

a. Press the button on the CD-ROM drive to open the CD-ROM disk holder.

b. Place the CD-ROM disk into the holder with the disk label facing up.

c. Press the button again to close the CD-ROM disk holder. **Do not** push the holder in by hand.

Note: If the CD-ROM is not in the CD-ROM drive, the installation will not continue. Insert the CD-ROM to continue.

2 Place the CP PII Install floppy disk into the MMDU floppy drive.

Note: If a problem is detected during the system verification, Install stops, prints an error message, and aborts the installation. If the verification is not successful, do not continue; contact your technical support organization.

3 Press the manual RESET button on the CP PII card faceplate. Before the install menu runs, the system validates hard disk partitioning which takes about five minutes. The screen displays:

Testing partition 0

0 percent done...1 percent done ...99 percent done....100 percent done

Testing partition 1

0 percent done...1 percent done...99 percent done...100 percent done

Testing partition 2

0 percent done...1 percent done.....99 percent done....100 percent completed!

Disk physical checking is completed!

There are 3 partitions in disk 0:
The size of partition 0 of disk 0 is XX MB
The size of partition 0 of disk 0 is XX MB
The size of partition 0 of disk 0 is XX MB

Disk partitions and sectors checking is competed!

4 At the terminal, press <cr> to start the software installation.

5 When prompted, remove the CP PII Install Program diskette and insert the Keycode diskette.

<a> Continue with keycode validation

<y> Confirm that the keycode matches the CD-ROM release

6 When the screen displays the Install Menu, select the following options in sequence when you are prompted to do so:

<a> Install software.

<a> Verify that the CD-ROM is now in drive.

The Installation Status Summary screen appears that lists the options to be installed.

<y> Start Installation.

<a> Continue with Upgrade.

7 Select a PSDL file to install. The PSDL file contains the loadware for all downloadable cards in the system and loadware for M3900 series telephones.

Select one of the six psdl files

<1> Global 10 Languages <default>

<2> Western Europe 10 Languages

<3> Eastern Europe 10 Languages

<4> North America 6 Languages

<5> Rls xx up-issue where xx = current version

<6> North America 6 Languages:

The languages contained in each selection are outlined as follows:

1 English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian, Portuguese, Finnish, Japanese Katakana.

2	English, French, German, Spanish, Swedish, Norwegian, Danish, Finnish, Italian, Brazilian Portuguese.
3	English, French, German, Dutch, Polish, Czech, Hungarian, Russian, Latvian, Turkish.
4	English, Spanish, French, Brazilian Portuguese, Japanese Katakana, German.
5	English, French, German, Spanish, Swedish, Italian, Norwegian, Portuguese, Finnish, Japanese Katakana.
6	English, French, German, Spanish, Brazilian Portuguese, Japanese Katakana.

8 Continue with ROM upgrade when prompted. Select a database to install.

<cr> Enter carriage return to continue.

<a> Continue with CP BOOTROM installation.

<a> Install the CP BOOTROM from hard disk.

<a> Start installation.

<a> Continue with ROM upgrade.

The Installation Status Summary screen appears. Verify that CD to disk, disk to ROM, and CP-BOOTROM were installed.

<cr> Continue.

<q> Quit (remove any diskettes and the CD-ROM from the MMDU drives).

<y> Confirm quit.

<a> Reboot the system.

9 The system automatically performs a sysload: several message appear on the system terminal. Wait for “DONE” and then “INI” message to display before you continue.

While the sysload is being performed, database conversion occurs.

Verify that the following message appears on the system terminal:

DATA CONVERSION

RELEASE 25.XX TO RELEASE 25.XX

10 Confirm that Release 25 software is installed and is working on Core/Net 1:

LD 135	Load the program.
STAT CPU	Display the CPU status.
STAT CNI	Display the cCNI status.

Check for peripheral software download

Use LD 22 to print the Target peripheral software version. (You printed the Source peripheral software version during the pre-conversion procedure.)

If there is a difference between the Source and Target peripheral software version, a forced download occurs during initialization when coming out of parallel reload. System initialization will take longer and established calls on IPE will be dropped.

LD 22	
REQ	PRT
TYPE	PSWV
ISSP	Print issue and release.
TID	Print Tape ID.
SLLP	Print System and patch information.
	Print auxiliary ID.
****	Exit program.

Enable system redundancy

From the active CPU, Core/Net 1, enable redundancy:

LD 135	
JOIN	Synchronize the memory and drives.

Test Core/Net 1 and Core/Net 0

From the active CPU, Core/Net 1, perform these tests:

1 Perform a redundancy sanity test using the following sequence:

LD 135	
STAT CNI c s	Get status of cCNI cards.
STAT CPU	Get status of CPU and memory.
TEST CPU	Test the CP PII card in both Core/Nets.
TEST CNI c s	Test each cCNI card (core, slot).
STAT SUTL	Get status of System Utility (main and Transition) cards.
TEST SUTL	Test the System Utility (main and Transition) cards.
TEST IPB	Test the Inter Processor Bus
TEST LCD	Test the LCDs.
TEST LED	Test the LEDs.

2 Test system redundancy:

LD 137	
TEST RDUN	Test redundancy.
DATA RDUN	
TEST CMDU	Test the MMDU card.

3 Switch Cores and test the other side (Core/Net 0)

LD 135	
SCPU	Switch cores.
TEST CPU	Test the inactive Core/Net.
STAT CNI c s	Get status of cCNI (both main and Transition) cards.
TEST CNI c s	Test cCNI (both main and Transition) cards.
STAT SUTL	Get status of System Utility card.
TEST SUTL	Test System Util card.
TEST IPB	Test Inter Processor Bus.
TEST LCD	Test LCDs.
TEST LED	Test LEDs

4 Clear the display and minor alarms on both Cores.

CDSP	Clear the displays on the Cores.
CMAJ	Clear major alarms.
CMIN ALL	Clear minor alarms.

5 Get the status of the Cores, CNIs, and memory.

STAT CPU	Get the status of both Cores and redundancy
STAT CNI c s	Get the status of all configured cCNIs (both main and Transition) cards.
****	Exit program.

Perform a data dump

1 Load the LD 43. At the prompt, enter

LD 43	Load the program

2 Insert a floppy disk into the MMDU to capture the backup.

3 When “EDD000” appears on the terminal, enter

EDD	Begin the data dump

4 When “DATABASE BACKUP COMPLETE” or “DATADUMP COMPLETE” appears on the terminal, enter

****

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. Correct any data dump problem before you continue.

The parallel reload procedure is complete.

Back out of a system software upgrade

To back out of a system software upgrade once it is in the redundant mode running CP PII, split the cores and install the old release of software. Perform the following procedures in order.

Split the Cores

From the active side, split the cores:

LD 135	Load the program.
SPLIT	Enter Split on the active core. Allow the former active side to INIT before continuing.
****	Exit the program.

The system is now in split mode.

Install the software on Core/Net 1

Install the old release of software:

1 Install the CD-ROM into the CD-ROM drive in the MMDU:

a. Press the button on the CD-ROM drive to open the CD-ROM disk holder.

b. Place the CD-ROM disk into the holder with the disk label facing up. Use the four tabs to secure the CD-ROM drive.

c. Press the button again to close the CD-ROM disk holder. **Do not** push the holder in by hand.

Note: If the CD-ROM is not in the CD-ROM drive, the installation will not continue. Insert the CD-ROM to continue.

2 Place the Install floppy disk with the old software release into the MMDU floppy drive.

Note: If a problem is detected during the system verification, install stops, prints an error message, and aborts the installation. If the verification is not successful, do not continue; contact your technical support organization.

3 Press the manual RESET button on the CP PII card faceplate. Before the install menu runs, the system validates hard disk partitioning which takes about five minutes. The screen displays:

Testing partition 0

0 percent done ...1 percent done ...99 percent done....100 percent done

Testing partition 1

0 percent done ...1 percent done ...99 percent done....100 percent done

Testing partition 2

0 percent done ...1 percent done ...99 percent done....100 percent completed!

Disk physical checking is completed!

There are 3 partitions in disk 0:
The size of partition 0 of disk 0 is XX MB
The size of partition 0 of disk 0 is XX MB
The size of partition 0 of disk 0 is XX MB

Disk partitions and sectors checking is competed!

4 At the terminal, press <cr> to start the software installation.

5 When prompted, remove the Install Program diskette and insert the Keycode diskette.

<a> Continue with keycode validation.

<y> Confirm that the keycode matches the CD-ROM release.

6 When the screen displays the Install Menu, select the following options in sequence when you are prompted to do so:

<a> Install software.

<a> Verify that the CD-ROM is now in drive.

The Installation Status Summary screen appears that lists the options to be installed.

<y> Start Installation.

<a> Continue with Upgrade.

7 Select a PSDL file to install. The PSDL file contains the loadware for all downloadable cards in the system and loadware for M3900 series telephones.

Select one of the six psdl files

<1> Global 10 Languages <default>

<2> Western Europe 10 Languages

<3> Eastern Europe 10 Languages

<4> North America 6 Languages

<5> Rls xx up-issue where xx = current version

<6>

North America 6 Languages:

The languages contained in each selection are outlined as follows:

1 English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian, Portuguese, Finnish, Japanese Katakana.

2 English, French, German, Spanish, Swedish, Norwegian, Danish, Finnish, Italian, Brazilian Portuguese.

3 English, French, German, Dutch, Polish, Czech, Hungarian, Russian, Latvian, Turkish.

4 English, Spanish, French, Brazilian Portuguese, Japanese Katakana, German.

5 English, French, German, Spanish, Swedish, Italian, Norwegian, Portuguese, Finnish, Japanese Katakana.

6 English, French, German, Spanish, Brazilian Portuguese, Japanese Katakana.

8 Continue with ROM upgrade when prompted. Select a database to install.

<cr> Enter carriage return to continue.

<a> Continue with CP BOOTROM installation.

<a> Install the CP BOOTROM from hard disk.

<a> Start installation.

<a> Continue with ROM upgrade.

The Installation Status Summary screen appears. Verify that CD to disk, disk to ROM, and CP-BOOTROM were installed.

<cr> Continue.

<q> Quit.
Remove any diskettes and the CD-ROM from the MMDU drives.

<y> Confirm quit.

<a> Reboot the system.

9 The system automatically performs a sysload: several message appear on the system terminal. Wait for “DONE” and then “INI” message to display before you continue.

While the sysload is being performed, database conversion occurs.

Verify that the following message appears on the system terminal:

DATA CONVERSION
RELEASE 25.XX TO RELEASE 25.XX

10 Confirm that Release XX software is installed and working on Core/Net 1:

LD 135	Load the program.
STAT CPU	Display the CPU status.
STAT CNI	Display the cCNI status.

Check for peripheral software download

Use LD 22 to print the Target peripheral software version. (You printed the Source peripheral software version during the pre-conversion procedure.)

If there is a difference between the Source and Target peripheral software version, a forced download occurs during initialization when coming out of parallel reload. System initialization will take longer and established calls on IPE will be dropped.

LD 22

REQ	Print.
TYPE	PSWV.
ISSP	Print issue and release.
TID	Print Tape ID.
SLLP	Print System and patch information.
	Print auxiliary ID.
****	Exit program.

Transfer call processing from Core/Net 0 to Core/Net 1

CAUTION

The following procedure to transfer call processing can cause service interruptions.

Time your procedure to minimize the effect of any breaks in service.

From Core/Net 0, the active side, transfer call processing to Core/Net 1:

LD 135	Load the program.
CUTOVR	The inactive CP become active.

Call processing is now switched from Core/Net 0 to Core/Net 1.

Test Core/Net 1

Test Call Processing. This includes, but is not limited to the following:

1 Check for dial tone.

2 Make internal, external, and network calls.

3 Check attendant console activity.

4 Check DID trunks.

5 Check any auxiliary processors.

Note: From this point forward you are upgrading Core/Net 0 with new software.

Install software on Core/Net 0

1 Install the CD-ROM into the CD-ROM drive in the MMDU:

a. Press the button on the CD-ROM drive to open the CD-ROM disk holder.

b. Place the CD-ROM disk into the holder with the disk label showing.

c. Press the button again to close the CD-ROM disk holder. **Do not** push the holder in by hand.

Note: If the CD-ROM is not in the CD-ROM drive, the installation will not continue. Insert the CD-ROM to continue.

2 Place the Install floppy disk for the old release of software into the MMDU floppy drive.

Note: If a problem is detected during the system verification, install stops, prints an error message, and aborts the installation. If the verification is not successful, do not continue; contact your technical support organization.

3 Press the manual RESET button on the CP PII card faceplate. Before the Install menu runs, the system validates hard disk partitioning which takes about five minutes. The screen displays:

Testing partition 0

0 percent done...1 percent done...99 percent done....100 percent done

Testing partition 1

0 percent done...1 percent done...99 percent done....100 percent done

Testing partition 2

0 percent done...1 percent done...99 percent done....100 percent completed!

Disk physical checking is completed!

There are 3 partitions in disk 0:
The size of partition 0 of disk 0 is XX MB
The size of partition 0 of disk 0 is XX MB
The size of partition 0 of disk 0 is XX MB

Disk partitions and sectors checking is competed!

4 At the terminal, press <cr> to start the software installation.

5 When prompted, remove the Install Program diskette and insert the Keycode diskette.

<a> Continue with keycode validation

<y> Confirm that the keycode matches the CD-ROM release

6 When the screen displays the Install Menu, select the following options in sequence when you are prompted to do so:

<a> Install software.

<a> Verify that the CD-ROM is now in drive.

The Installation Status Summary screen appears that lists the options to be installed.

<y> Start Installation.

<a> Continue with Upgrade.

7 Select a PSDL file to install. The PSDL file contains the loadware for all downloadable cards in the system and loadware for M3900 series telephones.

Select one of the six psdl files

<1> Global 10 Languages <default>

<2> Western Europe 10 Languages

<3> Eastern Europe 10 Languages

<4> North America 6 Languages

<5> Rls xx up-issue where xx = current version

<6> North America 6 Languages:

The languages contained in each selection are outlined as follows:

1 English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian, Portuguese, Finnish, Japanese Katakana.

2 English, French, German, Spanish, Swedish, Norwegian, Danish, Finnish, Italian, Brazilian Portuguese.

3 English, French, German, Dutch, Polish, Czech, Hungarian, Russian, Latvian, Turkish.

4 English, Spanish, French, Brazilian Portuguese, Japanese Katakana, German.

5 English, French, German, Spanish, Swedish, Italian, Norwegian, Portuguese, Finnish, Japanese Katakana.

6 English, French, German, Spanish, Brazilian Portuguese, Japanese Katakana.

8 Continue with ROM upgrade when prompted.
Select a database to install.

<cr> Enter carriage return to continue.

<a> Continue with CP BOOTROM installation.

<a> Install the CP BOOTROM from hard disk.

<a> Start installation.

<a> Continue with ROM upgrade.

The Installation Status Summary screen appears. Verify that CD to disk, disk to ROM, and CP-BOOTROM were installed.

<cr> Continue.

<q> Quit (remove any diskettes and the CD-ROM from the MMDU drives).

<y> Confirm quit.

<a> Reboot the system.

9 The system automatically performs a sysload: several message appear on the system terminal. Wait for “DONE” and then “INI” message to display before you continue.

While the sysload is being performed, database conversion occurs.

Verify that the following message appears on the system terminal:

DATA CONVERSION
RELEASE 25.XX TO RELEASE 25.XX

10 Confirm that Release 25.XX software is installed and working on Core/Net 1:

LD 135 Load the program.

STAT CPU Display the CPU status.

STAT CNI Display the cCNI status.

Check for peripheral software download

Use LD 22 to print the Target peripheral software version. (You printed the Source peripheral software version during the pre-conversion procedure.)

If there is a difference between the Source and Target peripheral software version, a forced download occurs during initialization when coming out of parallel reload. System initialization will take longer and established calls on IPE will be dropped .

LD 22	
REQ	PRT
TYPE	PSWV
ISSP	Print issue and release.
TID	Print Tape ID.
SLLP	Print System and patch information.
	Print auxiliary ID.
****	Exit program.

Enable system redundancy

From the active CPU, Core/Net 1, enable redundancy:

LD 135	
JOIN	Synchronize the memory and drives.

Test Core/Net 1 and Core/Net 0

From the active CPU, Core/Net 1, perform these tests:

1 Perform a redundancy sanity test using the following sequence:

LD 135	
STAT CNI c s	Get status of cCNI cards.
STAT CPU	Get status of CPU and memory.
TEST CPU	Test the CP PII card in both Core/Nets.
TEST CNI c s	Test each cCNI card (core, slot).
STAT SUTL	Get status of System Utility (main and Transition) cards.
TEST SUTL	Test the System Utility (main and Transition) cards.
TEST IPB	Test the Inter Processor Bus
TEST LCD	Test the LCDs.
TEST LED	Test the LEDs.

2 Test system redundancy:

LD 137	
TEST RDUN	Test redundancy.
DATA RDUN	
TEST CMDU	Test the MMDU card.

3 Switch Cores and test the other side (Core/Net 0)

LD 135	
SCPU	Switch cores.
TEST CPU	Test the inactive Core/Net.
STAT CNI c s	Get status of cCNI (both main and Transition) cards.
TEST CNI c s	Test cCNI (both main and Transition) cards.
STAT SUTL	Get status of System Utility card.
TEST SUTL	Test System Util card.
TEST IPB	Test Inter Processor Bus.
TEST LCD	Test LCDs.
TEST LED	Test LEDs

4 Clear the display and minor alarms on both Cores.

CDSP	Clear the displays on the Cores.
CMAJ	Clear major alarms.
CMIN ALL	Clear minor alarms.

5 Get the status of the Cores, CNIs, and memory.

STAT CPU	Get the status of both Cores and redundancy
STAT CNI c s	Get the status of all configured cCNIs (both main and Transition) cards.
****	Exit program.

Perform a data dump

1 Load the LD 43. At the prompt, enter

LD 43	Load the program

2 When “EDD000” appears on the terminal, enter

EDD	Begin the data dump

3 When “DATABASE BACKUP COMPLETE” or “DATADUMP COMPLETE” appears on the terminal, enter

****

CAUTION

If the data dump is not successful, do not continue; contact your technical support organization. Correct any data dump problem before you continue.

The software backup procedure is complete.

Release 25.40 Features

This section describes the features introduced with Meridian 1 Release 25.40 software. The features include:

- ACD DN/CDN Expansion
- Attendant Announcement
- New Large System Clock Controller Enhancement
- CPP Memory Enhancement
- i2050 Software Phone
- Internet Telephony Gateway (ITG) Line 2.2 card
- M3900 Phase III
- Network Breakin and Force Disconnect
- NI-2 B-channel Service Messaging
- NI-2 Name Display Supplementary Service
- Problem Determination Tool Password Enhnacement
- QSIG Message Waiting Indication Supplementary Service
- Redirecting Name Display Enhancement for QSIG Call Rerouting
- SDID Number as CLID for EuroISDN Trunks
- Singapore ISDN Restart Message Enhancement

This section also includes administration prompts, maintenance commands, and system message updates for Meridian 1 Release 25.40.

Enhancements to Meridian 1 software have been introduced with Release 25.40 for the following features with no impact or changes to the NTPs:

- CLID Enhancement for QSIG Call Diversion
- Dynamic PSDL
- Plug-ins for EMEA
- QSIG Call Completion and Call Diversion Interaction Enhancement

Enhancements that do not require their own documentation but make minor changes are as follows:

Enhancement	Covered in
Auto Negotiation	*Maintenance* (553-3001-511)
Wireless Visitors ISM	*Administration* (553-3001-311)
Keycode Enhancement	CP PII Software and Memory Upgrade

Meridian 1 Release 25.40 features are supported on Meridian 1 Options 11C, 51C, 61C, 81, and 81C systems.

ACD DN/CDN Expansion

Contents

The following are the topics in this section:

Feature description 59
Operating parameters 60
Feature interactions 60
Feature packaging 61
Feature implementation 61
Feature operation 61

Reference list

The following are the references in this section:

- *Automatic Call Distribution Feature Description* (553-2671-110)

Feature description

The Automatic Call Distribution Directory Number/Control Directory Number (ACD DN/CDN) Expansion feature increases the number of ACD DNs and/or CDNs on a Meridian 1 system for each customer from 240 to a maximum of 1000.

The maximum number of configurable ACD DNs and CDNs per system remains at 24 000. The maximum number of configurable customer groups remains at 100 per system. With the ACD DN/CDN feature, the Meridian 1 system limits remain the same.

Operating parameters

The ACD DN/CDN Expansion feature requires a Meridian 1 Option 81C system with a Call Processor Pentium PII (CP PII) card.

The ACD-C reports support a maximum of 240 ACD DNs as well as a maximum of 240 CDNs.

The time required to process the following functions increases with the additional number of configured DNs:

- ACD audit
- ACD data block initialization
- ACD Main audit
- ACD/CDN Queue Maintenance
- Agent Call Waiting Lamp and Display Waiting Call updates
- Auto Login during sysload
- Data Dump
- Enabling the Ring Again feature
- First and Second Recorded Announcements
- Message Waiting Lamp Reset
- Night Call Forward
- Night RAN Route
- Night Treatment
- Restoring ACD calls
- Revert Default of a CDN by Symposium Call Center Server
- Sysload
- Value Added Server and Teletype Terminal interactions

Feature interactions

The following applications continue to support 240 ACD DNs/CDNs:

- CallPilot

- Customer Controlled Routing and Meridian Link
- Meridian Mail
- Meridian MAX releases that support reporting on 240 ACD DNs and/or CDNs.
- Symposium Call Center Server
- TAPI Service Provider

Feature packaging

The ACD DN/CDN Expansion feature introduces the Automatic Call Distribution Expansion package 388 (ACDE). The ACD DN/CDN Expansion feature also requires the following existing packages:

- Automatic Call Distribution B (ACDB) package 41
- Automatic Call Distribution C (ACDC) package 42
- Automatic Call Distribution A (ACDA) package 45
- Automatic Call Distribution D (ACDD) package 50

Feature implementation

This feature does not change the procedures for configuring ACD queues in Overlay 23.

Feature operation

No specific operating procedures are required to use this feature.

Attendant Announcement

Contents

The following are the topics in this section:

Feature description 63
Attendant Announcement types 64
Announcement source types 66
Alternative Attendant Announcement treatment 67
Attendant Alternative Answer 68
Operating parameters 69
Feature interactions 69
Feature packaging 72
Feature implementation 73
Task summary list 73
Announcements provided by XCT/TDS tone services 73
Announcements provided by RAN services 78
Feature operation 81

Feature description

Note: This feature only applies to the PC Attendant.

Release 25.40 software introduces the Attendant Announcement feature. The Attendant Announcement feature provides announcements for calls terminating on the attendant, attendant queue or night station. Announcements continue to play until the attendant answers the call.

Attendant Announcement is enabled on a route basis at the Attendant Announcement (ATAN) prompt.

An Attendant Announcement can be provided when a call from the Public Network terminates over an MCDN trunk to the attendant or night station. For this functionality, set the ATAN prompt to PSTN in Overlay 16. An announcement is provided when the incoming call over the network is marked as a PSTN call. Network Attendant Services (NAS) must be enabled for the TIE trunk's D-channel.

Attendant Announcement types

The Attendant Announcement feature provides different announcements based on the state of the call.

Configure the following announcement types in Overlay 56:

- Announcement when terminating to the Attendant (ANAT)

  When a call is dialed directly, or intercepted, to the attendant, the caller receives an ANAT announcement.

- Announcement when Night Service is activated (ANNS)

  When a call is terminated to the night station or the night service queue, the caller receives an ANNS announcement.

- Announcement when Call Forward No Answer to the Attendant (ANFA)

  When a Call Forward No Answer (CFNA) call is redirected to the attendant, the caller receives an ANFA announcement.

- Announcement when Call Forward Busy to the Attendant (ANFB)

  When a Call Forward Busy (CFB) or Hunt call is redirected to the attendant, the caller receives an ANFB announcement.

- Announcement when Slow Answer Recall to the Attendant (ANSR)

  When a call is extended by the attendant and the call is not answered within Recall Timer (RTIM) time, the caller is redirected to the attendant and receives an ANSR announcement.

- Announcement on Attendant Extended Calls (ANXC)

  When an attendant transfers a trunk call to an extension, the caller receives an ANXC announcement until the requested party goes off hook.

- Announcement when Overflowed or Forwarded (ANOF)

  If a customer uses the Attendant Overflow Position (AOP) or Attendant Alternative Answer (AAA) features, the call is redirected after a specific time to a predefined telephone. The caller receives an ANOF announcement until the call is answered.

Table 1 summarizes the types of announcements provided to the caller when a call is terminated to the attendant, attendant queue, night station or night queue.

Table 1
Announcement received at termination

Type of call	Call destination	Announcement received
Direct calls or abandoned calls	Attendant or attendant queue	ANAT
Direct calls or abandoned calls	Night station or night queue	ANNS
Call Forward No Answer treatment (CFNA)	Attendant, attendant queue, or night station	ANFA
Call Forward Busy treatment (CFB)	Attendant, attendant queue, or night station	ANFB
Slow Answer Recall	Attendant, attendant queue, or night station	ANSR
Attendant Extended calls	Attendant, attendant queue, or night station	ANXC
Overflowed or Forwarded calls	Attendant, attendant queue, or night station	ANOF

Special options

During normal operations, when a call terminates to the night station, the ANNS announcement is given. This also applies to redirected calls. However, on small systems where the switch is in permanent night mode, call redirection information cannot be used.

In this case, Call Forward No Answer calls terminate to the night station and the caller receives an ANNS announcement. If the night station announcement priority (NIPR) option in the announcement profile is set to "NO", calls redirected to the night station receive an appropriate greeting.

If an announcement is required only when the call is in the attendant or night service queue, set the Attendant Queue (ANQU) option to "YES".

Announcement source types

Either of the following external devices provides attendant announcements to the caller:

- Tone interface
- Recorded Announcement (RAN) trunk interface (for example, MIRAN)

Tone interface announcements

When announcements are provided through the tone interface, they are treated as tones.

Tone announcements require a digital speech generator connected to the faceplate connector of the Extended Conference (XCT) card or Tone and Digit Switch (TDS) card.

Tone interface announcements are configured in Overlay 56.

Tone interface announcements play from the beginning of the announcement until the attendant answers the call. No initial greeting can be played.

RAN trunk interface announcements

Attendant announcements can be provided by existing RAN trunks.

To ensure that callers hear the announcements from the beginning, configure the Recorded Announcement with a Delay Dial (DDL) at the Start Arrangement (STRT) prompt in Overlay 16.

Answer Supervision for RAN trunks

Use the Answer Supervision (ASUP) prompt in Overlay 16 to return Answer Supervision by RAN to the originator.

Post-RAN post treatment

Existing RAN functionality allows an announcement to repeat up to fifteen times. Post-RAN treatment is followed after the defined number of repetitions. The number of repetitions and Post-RAN treatment are defined in Overlay 16 at the REP and POST prompts respectively.

For the Attendant Announcement feature, Post-RAN treatment uses RAN Hunting. RAN Hunting allows a new RAN trunk to be connected after the preceding RAN trunk is terminated. This allows a general Recorded Announcement to play once. When this announcement finishes, it then switches to another announcement.

If RAN Hunting is configured to connect to the same route, Hunting does not occur. Therefore, the same Recorded Announcement repeats in a continuous loop. If RAN Hunting is not configured, the current RAN route is used.

Alternative Attendant Announcement treatment

With Alternative Attendant Announcement (AAT) treatment, different announcements are provided to the caller depending on the time and date. For example, a “Good morning!” greeting can be played until noon and then the greeting is switched automatically to “Good afternoon!”.

When you enable AAT in Overlay 16, you have the following options:

- Alternative Attendant Announcement Time of Day (AATO)
- Alternative Attendant Announcement Day of Week (ADAY)
- Alternative Attendant Announcement Holiday (AHOL)

You can configure up to four different optional times of day and four different optional days of week. Configure these options to select an Alternative Announcement Table (AATB). Only one alternate time and announcement table can be used in the Route Data Block.

If a caller calls within a period specified by one of the Alternative Attendant Announcement options, the Alternative Announcement Table is used.

If the Alternative Attendant Announcement treatment is used with Call Redirection by Time of Day or Call Redirection by Day of Week, the four alternative options must be shared between the two features.

If MIRAN is used as a RAN source, the Alternative Attendant Announcement option can be disabled, as MIRAN uses this capability. This helps to reduce the number of RAN ports.

Attendant Alternative Answer

When a call is originated by a trunk, it must be answered in order for the Attendant Announcement to be provided. When Call Answer functionality is activated, the call registers as an answered call.

For Call Answer functionality, you must select one of the following options at the Attendant Alternative Answer Option (AAAO) prompt in Overlay 16:

- No Call Answer (NO)
- Call Answer on Announcement (CAA)
- Call Answer Forced (CAF)

No Call Answer

No Call Answer is the default operation. With this option, No Call Answer is provided by this feature.

Select this option for trunks where it is not necessary to answer the trunk in order to open the speech path.

Call Answer on Announcement

When you select this option, a connect message is sent to the originating trunk only when an announcement is provided. An answer is not provided if the incoming call does not terminate to an attendant.

An answer is provided in the following cases:

- a call terminates to the attendant, attendant queue or night station.
- the Call Answer option is enabled
- an external announcement has been configured in Overlay 56.

Call Answer Forced

Only select this option for cases when tone announcement will be used as the announcement source and an announcement is necessary for all calls terminating to the switch.

When this option is activated, an error message is displayed to indicate that all calls are answered immediately.

With Call Answer Forced, an answer is provided in the following cases:

- a call terminates to the attendant, attendant queue or night station.
- the call answer option is enabled
- an external announcement has been configured in Overlay 56.

Operating parameters

If a greeting is not defined for one of the announcement types, the caller receives a normal ringback tone. This generates an error message to the maintenance terminal.

After system initialization, calls receiving an announcement are not restored. The calls are dropped and the caller hears silence.

If a caller calls the night station directly, no attendant announcement is provided.

Attendant Announcement is not provided on series calls.

Feature interactions

Attendant Alternative Answering

If the call to the attendant receives an attendant announcement and the call is forwarded to the Attendant Alternative Answering DN, the announcement is removed and an ANOF announcement is provided, if configured.

Attendant Barge-In

A busy tone is provided to the attendant when the operator barges into a trunk that is receiving an attendant announcement.

Attendant Clearing during Night Service

When the attendant goes into night service and a call is in the attendant queue, the call is routed to the night DN and receives the appropriate announcement defined for the night station.

Attendant Forward No Answer

If a call is presented to the attendant, the call receives an announcement, and is forwarded to the night station, the call is requeued. If the call goes to the night station, the caller hears an ANNS announcement, if configured.

Attendant Interpositional Transfer

When an incoming call with Attendant Announcement enabled is transferred to another attendant, no announcement is provided.

Attendant Overflow Position

If a call is presented to the attendant while receiving an announcement and the call is then forwarded to the Attendant Overflow Position DN, the announcement is not removed. The ANOF announcement is provided, if configured.

Attendant Recall

Attendant Announcement does not support the Attendant Recall feature.

Automatic Call Distribution

Automatic Call Distribution (ACD) applies when the night DN is an ACD DN. No announcement is provided when a call terminates to the ACD queue. ACD announcements must be configured instead.

Automatic Timed Reminders

An Automatic Timed Reminders recall receives the appropriate announcements.

Call Detail Recording Time to Answer

Attendant Announcement does not affect Call Detail Recording Time to Answer. A separate CDR for the RAN trunk is generated by the RAN answered calls.

Call Forward All Calls

An Attendant Announcement is provided if the night station activates Call Forward All Calls (CFAC).

An Attendant Announcement is provided when the call terminates to the attendant.

Call Forward No Answer
Call Forward Busy
Slow Answer Recall

Call Forward No Answer (CFNA), Call Forward Busy (CFB) or Slow Answer Recall announcements take precedence over direct calls to the attendant, attendant queue or night station. Announcement when terminating to the Attendant (ANAT) or Announcement when Night Service is active (ANNS) is the standard announcement provided for other calls. Ringback tone is provided to the caller if an announcement is not defined.

Call Redirection by Time of Day
Call Redirection by Day of Week

For Call Redirection by Time of Day and Call Redirection by Day of Week, it is possible to configure up to four options. If Attendant Announcement is configured to use either Call Redirection by Time of Day or Call Redirection by Day of Week, three options remain.

Centralized Attendant Service

Centralized Attendant Service does not support Attendant Announcement.

DPNSS1

The Attendant Announcement feature does not support DPNSS-originated calls.

Direct Inward Dialing Call Forward No Answer Timer

DID Forward No Answer (DFNR) calls receive the Call Forward No Answer announcement when they are terminated to the attendant.

EuroISDN Connected Number

If a call is presented to the attendant, an attendant announcement is provided to the caller. The dialed DN is provided as a connected number.

MCDN-QSIG Gateway

The MCDN-QSIG Gateway is not affected by the Attendant Announcement feature. Attendant Announcement uses existing Network Attendant Services (NAS) information to determine whether an announcement should be given.

Trunk Anti-Tromboning

Trunk-to-trunk connections are optimized when they receive ANSWER treatment. Attendant Announcement answers a trunk call; however, the actual call is not established. The trunk is in an answer state, but it is still present in the attendant queue.

Trunk Anti-Tromboning (TAT) is not triggered during Attendant Announcement. TAT is triggered to optimize the call when the console answers the call.

Recorded Overflow Announcement

Attendant Announcement takes precedence over Recorded Overflow Announcement.

Slow Answer Recall

Slow Answer Recall calls receive ANSR announcement when specified.

Virtual Network Service

Announcements are not provided on internal VNS calls. If ATAN is set to "YES", no VNS calls receive Attendant Announcement.

Feature packaging

The Attendant Announcement feature introduces Attendant Announcement (AANN) package 384.

This feature also requires the following existing packages:

- Recorded Announcement (RAN) package 7 (if RAN Announcements are used)
- Attendant Overflow Position (AOP) package 56 (if AOP is used)
- Flexible Tones and Cadences (FTC) package 125
- Attendant Forward No Answer (AFNA) package 134 (if AFNA is used)
- Network Attendant Service (NAS) package 159 (if used over MCDN network)
- Message Intercept (MINT) package 163

- Attendant Alternative Answering (AAA) package 174 (if AAA is used)
- Recorded Announcement Broadcast (RANBRD) package 327 (if the broadcast facility of the RAN trunk is used)

Feature implementation

Task summary list

Use the following to configure announcements provided by XCT/TDS tone services:

1 LD 56 – Configure the Attendant Announcement table.

2 LD 56 – Configure tone announcement for small systems.

3 LD 56 – Configure tone announcement for large systems.

4 LD 16 – Enable the Attendant Announcement.

Use the following to configure announcements provided by RAN services:

1 LD 16 – Configure RAN routes for Attendant Announcement.

2 LD 56 – Configure the Attendant Announcement table for RAN usage.

3 LD 16 – Configure Route Data Block for Attendant Announcement.

Announcements provided by XCT/TDS tone services

LD 56 – Configure the Attendant Announcement table.

Prompt	Response	Description
REQ	NEW CHG	Add new data. Change existing data.
TYPE	AANN	Attendant Announcement data block.
CUST	xx	Customer number.
TBL	0-31	Announcement table number.
- NIPR		Nightstation Announcement Priority.
	(NO) YES	ANNS is not provided on each call to the night station ANNS is provided on each call to the night station.

Prompt	Response	Description
- ANQU	(NO) YES	Announcement is not provided on calls in the attendant queue or night service queue only. Announcement is provided on calls in the attendant queue or night service queue only.
- ANAT	aaa	Announcement when terminating to the Attendant, where: aaa= SRC1 - SRC8 source entry of the appropriate tone table.
- ANNS	aaa	Announcement when terminating to night station, where: aaa = SRC1 - SRC8 source entry of the appropriate tone table.
- ANFA	aaa	Announcement when Call Forward No Answer to Attendant, where: aaa = SRC1 - SRC8 source entry of the appropriate tone table.
- ANFB	aaa	Announcement when Call Forward Busy to Attendant, where: aaa = SRC1 - SRC8 source entry of the appropriate tone table.
- ANSR	aaa	Announcement when Slow Answer Recall, where: aaa = SRC1 - SRC8 source entry of the appropriate tone table.
- ANXC	aaa	Announcement on Attendant Extended Calls, where: aaa = SRC1 - SRC8 source entry of the appropriate tone table.
- ANOF	aaa	Announcement on Attendant Overflow Calls, where: aaa = SRC1 - SRC8 source entry of the appropriate tone table.

LD 56 – Configure tone announcement for small systems.

Prompt	Response	Description
REQ	NEW CHG	Add new data. Change existing data.
TYPE	FTC	Flexible Tones and Cadences.
TABL	0-31	Define tone table number.
...		

Prompt	Response	Description
SRC	YES	Source.
SRC1		Source that indicates announcement channel of the hardware.
- XTON	(0)-255	XCT (NT8D17 Conference/TDS) Tone code.
- XCAD	(0)-255	XCT (NT8D17 Conference/TDS) Cadence number.
SRC2		Source that indicates announcement channel of the hardware.
- XTON	(0)-255	XCT (NT8D17 Conference/TDS) Tone code.
- XCAD	(0)-255	XCT (NT8D17 Conference/TDS) Cadence number.
- SRC3		Source that indicates announcement channel of the hardware.
- XTON	(0)-255	XCT (NT8D17 Conference/TDS) Tone code.
- XCAD	(0)-255	XCT (NT8D17 Conference/TDS) Cadence number.
SRC4		Source that indicates announcement channel of the hardware.
- XTON	(0)-255	XCT (NT8D17 Conference/TDS) Tone code.
- XCAD	(0)-255	XCT (NT8D17 Conference/TDS) Cadence number.

LD 56 – Configure tone announcement for large systems.

Prompt	Response	Description
REQ	NEW CHG	Add new data. Change existing data.
TYPE	FTC	Flexible Tone and Cadences.
TABL	0-31	Define tone table number.
...		
SRC	YES	Source.
SRC1		Source that indicates announcement channel of the hardware, where: xx = (0)-255.
- TDSH	1 0 0 xx	TDS Hex
- XTON	xx	XCT (NT8D17 Conference/TDS) Tone code.
- XCAD	yy	XCT (NT8D17 Conference/TDS) Cadence number.

Prompt	Response	Description
SRC2		Source that indicates announcement channel of the hardware, where: xx = (0)-255.
- TDSH	1 0 0 xx	TDS Hex
- XTON	xx	XCT (NT8D17 Conference/TDS) Tone code.
- XCAD	yy	XCT (NT8D17 Conference/TDS) Cadence number.
SRC3		Source that indicates announcement channel of the hardware, where: xx = (0)-255.
- TDSH	1 0 0 xx	TDS Hex
- XTON	xx	XCT (NT8D17 Conference/TDS) Tone code.
- XCAD	yy	XCT (NT8D17 Conference/TDS) Cadence number.
SRC4		Source that indicates announcement channel of the hardware, where: xx = (0)-255.
- TDSH	1 0 0 xx	TDS Hex
- XTON	xx	XCT (NT8D17 Conference/TDS) Tone code.
- XCAD	yy	XCT (NT8D17 Conference/TDS) Cadence number.

LD 16 – Enable the Attendant Announcement.

Prompt	Response	Description
REQ	NEW CHG	Add a new data. Change existing data.
TYPE	RDB	Route Data Block.
...		
TKTP		Trunk Type
	a..a	Attendant Announcement is available on DID, TIE and COT trunks only.
...		

Prompt	Response	Description
ATAN		Attendant Announcement.
	(NO) YES PSTN	No Attendant Announcement. Enable Attendant Announcement on this route. Enable Attendant Announcement on this route for PSTN calls only (for MCDN trunks only).
- ATBL	xx	Announcement profile table, where: xx = 0-31 This number should correspond with what you set at the AANN prompt to in LD 56.
- AAT		Alternative Attendant Announcement.
	(NO) YES	Disable Alternative Attendant Announcement. Enable Alternative Attendant Announcement.
--AATO	(0) - 3	Alternative Attendant Announcement Time of Day option.
--ADAY	(0) - 3	Alternative Attendant Announcement Day of Week option.
--AHOL	(0) - 3	Alternative Attendant Announcement Holiday option.
--AATB	xx	Announcement Profile Table for Alternative Announcement, where: xx = 0-31 This number should correspond with what you set at the AANN prompt to in LD 56.
- AAAO		Attendant Alternative Answer Option. This option is for Tone Announcements only.
	(NO) CAA CAF	No call answer is given Call answer will be given on announcement. Call answer will be given forced.

Announcements provided by RAN services

LD 16 – Configure RAN routes for Attendant Announcement.

Prompt	Response	Description
REQ	NEW CHG	Add new data. Change existing data.
TYPE	RDB	Route Data Block.
...		
TKTP		Trunk Type.
	RAN	RAN route.
RTYP	MCON	Continuous multichannel.
REP	1-15	Number of repetitions of this RAN.
STRT	DDL	Delay call connection until start of announcement.
BDCT		Broadcast Capability.
	(NO) YES	Deny RAN Broadcast Capability for this route. Allows RAN Broadcast Capability for this route.
WAIT	RGB	Provide ringback tone for calls queuing for RAN trunk.
ASUP		Answer Supervision.
	(NO) YES	Answer Supervision is controlled in the RDB of the incoming trunk route. Return Answer Supervision.
RANH	0-511	RAN route number when Attendant Announcement is completed.

LD 56 – Configure the Attendant Announcement table for RAN usage.

Prompt	Response	Description
REQ	NEW CHG	Add new data. Change existing data.
TYPE	AANN	Attendant Announcement data block.
CUST	xx	Customer number.
TBL	0-31	Announcement table number.
- NIPR		Night station Announcement Priority.
	(NO) YES	ANNS is not provided on each call to the night station. ANNS is provided on each call to the night station.
- ANQU		Attendant Queue.
	(NO) YES	Announcement is not provided on calls in the attendant queue or night service queue only. Announcement is provided on calls in the attendant queue or night service queue only.
- ANAT	aaa	Announcement when terminating to the Attendant, where: aaa = R000 - R511 announcement is provided through the RAN announcement for large system. aaa = R000 - R128 announcement is provided through the RAN announcement for small system.
- ANNS	aaa	Announcement when terminating to the night station, where: aaa = R000 - R511 announcement is provided through the RAN announcement for large system. aaa = R000 - R128 announcement is provided through the RAN announcement for small system.
- ANFA	aaa	Announcement when Call Forward No Answer to Attendant, where: aaa = R000 - R511 announcement is provided through the RAN announcement for large system. aaa = R000 - R128 announcement is provided through the RAN announcement for small system.

Prompt	Response	Description
- ANFB	aaa	Announcement when Call Forward Busy to Attendant, where: aaa = R000 - R511 announcement is provided through the RAN announcement for large system. aaa = R000 - R128 announcement is provided through the RAN announcement for small system.
- ANSR	aaa	Announcement when Slow Answer Recall, where: aaa = R000 - R511 announcement is provided through the RAN announcement for large system. aaa = R000 - R128 announcement is provided through the RAN announcement for small system.
- ANXC	aaa	Announcement on Attendant Extended Calls, where: aaa = R000 - R511 announcement is provided through the RAN announcement for large system. aaa = R000 - R128 announcement is provided through the RAN announcement for small system.
- ANOF	aaa	Announcement on Attendant Overflow Calls, where: aaa = R000 - R511 announcement is provided through the RAN announcement for large system. aaa = R000 - R128 announcement is provided through the RAN announcement for small system.

LD 16 – Configure Route Data Block for Attendant Announcement.

Prompt	Response	Description
REQ	NEW CHG	Add a new data. Change existing data.
TYPE	RDB	Route Data Block.
...		
TKTP		Trunk Type.
	a..a	Attendant announcement is available on DID, TIE and COT trunks only.

Prompt	Response	Description
...		
ATAN		Attendant Announcement.
	(NO) YES PSTN	No Attendant Announcement. Enable Attendant Announcement on this route. Enable Attendant Announcement on this route on PSTN calls only (For MCDN trunks only).
- ATBL	xx	Announcement profile table, where: xx = 0-31 This number should correspond with what you set the AANN prompt to in LD 56.
- AAT		Alternative Attendant Announcement.
	(NO) YES	Disable Alternative Attendant Announcement. Enable Alternative Attendant Announcement.
--AATO	(0) - 3	Alternative Attendant Announcement Time of Day option.
--ADAY	(0) - 3	Alternative Attendant Announcement Day of Week option.
--AHOL	(0) - 3	Alternative Attendant Announcement Holiday option.
--AATB	xx	Announcement Profile Table for Alternative Announcement, where: xx = 0-31 This number should correspond with what you set at the AANN prompt in LD 56.
- AAAO	(NO)	No Call Answer is given (for Tone Announcement only).

Feature operation

No specific operating procedures are required to use this feature.

Clock Controller Description and Installation

Contents

The following are the topics in this section:

Introduction 84

Description 84

- Need for synchronization 85
- Supported Clock Controllers 85
- Synchronization methods 88
- Hierarchical synchronization 88
- Stratum levels 90
- Frame slip 90
- Guidelines 91
- Modes of operation 98
- Option 11C Clock Controller daughterboard 99

Installation procedures 100

- Determine slots and shelves 100
- Set switches 100
- Start the Clock Controller 102
- Clock Controller commands 102
- LD 39 commands with the NTRB53 Clock Controller 103
- Install or replace a Clock Controller on Option 51C, 61C half group 103
- Install or replace a Clock Controller on Option 61C/81C 105
- Upgrade to an NTRB53 Clock Controller on Option 61C/81C 107

Reference list

The following are the references in this section:

- *Option 11C 1.5Mb DTI/PRI* (553-3011-310)
- *Option 11C 2.0Mb DTI/PRI* (553-3011-315)

Introduction

This chapter introduces the NTRB53 Clock Controller, and provides procedures on how to install this clock controller on Meridian 1 Options 51C, 61C, and 81C systems.

The NTRB53 Clock Controller will replace the QPC471H and QPC775F in new systems. QPC471H and QPC775F Clock Controllers will continue to be supported.

Note 1: The description section of this chapter applies to all supported Meridian 1 systems, that is, Options 11C, 51C, 61C, and 81C. However, the installation procedures apply only to Options 51C, 61C, and 81C. For Option 11C specific information, refer to *Option 11C 1.5Mb DTI/PRI* (553-3011-310) and *Option 11C 2.0Mb DTI/PRI* (553-3011-315).

Also, the illustrations used in the description section depict an Option 11C. However, the system may also be representative of an Option 51C, 61C, or 81C.

Description

This section provides an overview on the use of clock controllers on Meridian 1 Option 11C, 51C, 61C, and 81C systems. For Meridian 1 large systems, the following clock controllers are supported:

- NTRB53
- QPC471
- QPC775

Note: Clock controllers cannot be mixed in one system.

The NTRB53 Clock Controller is available for all markets. The QPC471 Clock Controller is available for U.S. markets. Vintages A through G of the QPC471 Clock Controller can be used in one system; vintage H of QPC471 Clock Controllers cannot be mixed with clock controllers of other vintages.

The QPC775E Clock Controller card is available for only the Canadian and International markets.

Need for synchronization

Digital trunking requires synchronized clocking so that a shift in one clock source will result in an equivalent shift of the same size and direction in all parts of the network.

When digital signals are being transported over a communication link, the receiving end must operate at the same frequency (data rate) as the originating end to prevent loss of information. This is referred to as link synchronization. If both ends of a communication link are not in synchronization, data bit slips occur and therefore a loss of data results. In general, accurate timing is very important, but more importantly synchronized timing is a must for reliable data transfer.

When only two Meridian 1 switches are interconnected, synchronization can be achieved by operating the two systems in a master/slave mode whereby one system derives its timing from the other. However, in a network of digital systems, slips can be better prevented by forcing all digital systems to use a common reference clock (see Figure 1on page 89).

Supported Clock Controllers

For Meridian 1 large systems, the following clock controllers are supported:

- NTRB53
- QPC471
- QPC775

NTRB53 Clock Controller

Introduced with Release 25.40, the NTRB53 Clock Controller is a replacement for the QPC471 and QPC775 Clock Controllers. The NTRB53 clock controller retains existing functionality.

Software configuration of the clock remains unchanged. Release 25.40 software introduces a Peripheral Software Download (PSDL) object to allow field upgrades of the clock's firmware. Overlay changes allow for force download and status checking. Support for the IDC command and hardware inventory are also included.

The NTRB53 Clock Controller is compatible with the following systems and software releases.

Table 2
NTRB53 card compatibility guide

Meridian 1	Release 25.40	Release 19 to 25.3x
Option 11C/Mini	No	No
Option 21E	No	Yes
Option 51	No	Yes
Option 51C	Yes	Yes
Option 61	No	Yes
Option 61C	Yes	Yes
Option 71	No	Yes
Option 81	No	Yes
Option 81C	Yes	Yes

Note: PSDL enhancements will not be available for software prior to Release 25.40.

System Initialization

During system initialization, the system software will verify if the clock controllers equipped in the system are the downloadable clock controllers (NTRB53) or not. If the clock controllers are identified as the downloadable clock controller cards, then both downloadable clock controller cards will be checked for the software version number they are running with. This is compared with the version number of the PSDL file stored in the Meridian 1 software database.

If there is a mismatch between the two version numbers and Meridian 1 database has the higher version number, the card will be put in the PSDL downloading tree. Once the entry is added in the PSDL tree, the preprocess step is done. The next step is for the system to initiate the downloading in the background, using the PSDL tree. As soon as the download complete message is received from the card, the CPU sends a message to reset the clock controller card so that it boots with the new software. Once a selftest is complete the core sends an enable base message to enable the card.

Maintenance Overlays

Downloading can be initiated from Overlay 60 for the inactive clock controller card as part of the enabling sequence of the card. A download can be forced by specifying the optional parameter FDL (Force Download) when enabling the card. At the prompt, enter:

ENL CC x FDL	Enable Clock in side x with the force download option

If the optional parameter is not specified, then downloading is conditional. This means that the version number of the loadware on the clock controller card will be checked against the version number stored on the Meridian 1 disk. If a mismatch is found and the version number in the Meridian 1 software database is higher, then downloading will be initiated for that card. The entry for the card is not added to the PSDL tree at this time. Instead, downloading is initiated on a single card and only that card will be allowed to perform the force download option.

QPC471 and QPC775 Clock Controllers

Clock Controllers QPC471 and QPC775 will continue to function with software Release 25.40 and above on the following systems:

- Meridian 1 Option 51C
- Meridian 1 Option 61C
- Meridian 1 Option 81C

Note: See “Description” on page 84. for market and application availability information.

Synchronization methods

There are two common methods of operation for maintaining timing coordination between switching systems, Plesiosynchronous and Mesosynchronous.

Plesiosynchronous operation

In a Plesiosynchronous operation, nodal clocks run independently (free run) at the same nominal frequency. There are frequency differences between clocks resulting in frame slips (see “Frame slip” on page 90.) The magnitude of frame slips are directly proportional to the frequency difference. Slips are inevitable but can be minimized by using very stable clocks and elastic stores or buffers. These buffers are capable of absorbing a certain number of data bits to compensate for slight variances in clock frequencies.

Mesosynchronous operation

In a Mesosynchronous operation, nodal clocks are continuously and automatically locked to an external reference clock. With this method, frame slips can be eliminated if elastic stores are large enough to compensate for transmission variances. Mesosynchronous operation is virtually slip free.

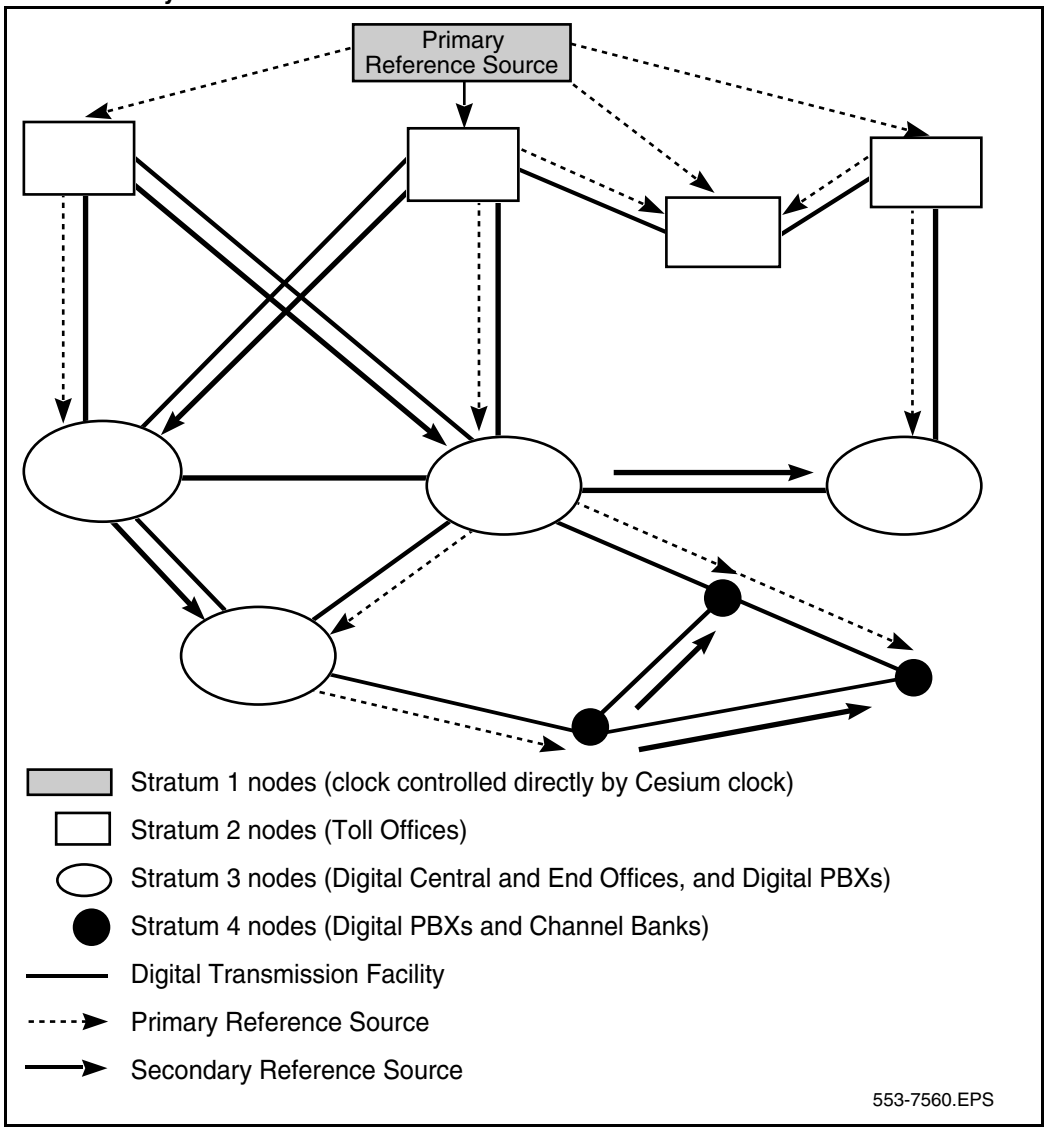
Whenever possible the Meridian 1 switch uses the Mesosynchronous mode of operation by using the clock controller circuit cards to lock onto an external reference source (such as the Central Office, another Meridian 1 switch, and so on). This statement is true unless the Meridian 1 is used as a Master in an independent/private network (no digital links to a higher Node Category).

In an isolated private network, the Meridian 1 clock controller can operate in free run mode and act as a master clock to be tracked by other switch systems in the private network.

Hierarchical synchronization

Figure 1on page 89 provides a general view of the Digital Network Clock Synchronization including the four stratum level Node Categories. Stratum 1 being the most accurate and Stratum 4 being the least accurate. Meridian 1 clocking meets Node Category E Stratum 4 requirements. Also shown are ways of providing a Secondary Clock Source while preventing timing loops.

Figure 1
Hierarchical Synchronization


Primary
Reference Source
Stratum 1 nodes (clock controlled directly by Cesium clock)
Stratum 2 nodes (Toll Offices)
Stratum 3 nodes (Digital Central and End Offices, and Digital PBXs)
Stratum 4 nodes (Digital PBXs and Channel Banks)
Digital Transmission Facility
Primary Reference Source
Secondary Reference Source
553-7560.EPS

Stratum levels

In a digital network, nodes are synchronized using a priority master/slave method. Digital nodes are ranked in Stratum levels 1 to 5. Each node is synchronized to the highest ranking node in its neighborhood with which it has a direct link. Refer to Table 3.

Table 3
Node categories and stratum levels

	Stratum 2	Stratum 3	Stratum 4
Accuracy	+/- 1.6 * 10^{-8} Hz	+/- 4.6 * 10^{-6} Hz	+/- 3.2 * 10^{-5} Hz
Holdover	1 * 10^{-10} per day	<= 255 frame slips in 1st 24 hours	Not Required
Hardware Duplication	Required	Required (Note 1)	Not Required
MTIE During Rearrangement	MTIE <= 1 usec Phase Change Slope: <= 81 ns in any 1.326 msec	MTIE <= 1 usec Phase Change Slope: <= 81 ns in any 1.326 msec	No Requirement (Note 2)
Pull-in Range	3.2 * 10^{-8} Hz	9.2 * 10^{-6} Hz	6.4 * 10^{-5} Hz
Dedicated Timing Required	Required	Required	Not required

Note 1: Non-duplicated clock hardware that meets all other stratum 3 requirements is referred to as stratum 3ND.

Note 2: Stratum 4 clock hardware that meets MTIE requirements during rearrangements is referred to as 4E.

Frame slip

Digital signals must have accurate clock synchronization for data to be interleaved into or extracted from the appropriate timeslot during multiplexing and demultiplexing operations. A Frame Slip is defined (for 2 Mbyte links) as the repetition of, or deletion of the 256 data bits of a CEPT frame due to a sufficiently large discrepancy in the read and write rates at the buffer (clocks are not operating at exactly the same speed).

When data bits are written into (added to) a buffer at a slightly *higher* rate than that at which they are being read (emptied), sooner or later the buffer overflows This is a slip-frame deletion.

In the opposite situation, when data bits are written (added) into a buffer at slightly *lower* rate than that at which they are being read (emptied), eventually the buffer runs dry or underflows. This is also a slip-frame repetition.

A 1.5 Mbyte PRI contains a buffer large enough to hold about 2 full DS-1 frames (193 x 2 = 386). A 2 Mbyte PRI contains a buffer large enough to contain 2 full frames (256 x 2 = 512 bits). The buffere is normally kept half full (1 frame).

Slippage has impact on the data being transferred, as is shown in Table 4. All of the degradations shown in the table can be controlled or avoided with proper clock synchronization.

Table 4
Performance impact of one slip on service type

Service	Potential Impact
Encrypted Text	Encryption key must be resent.
Video	Freeze frame for several seconds. Loud pop on audio.
Digital Data	Deletion or repetition of data. Possible misframe.
Facsimile	Deletion of 4 to 8 scan lines. Dropped call.
Voice Band Data	Transmission Errors for 0.01 to 2 s. Dropped call.
Voice	Possible click.

Guidelines

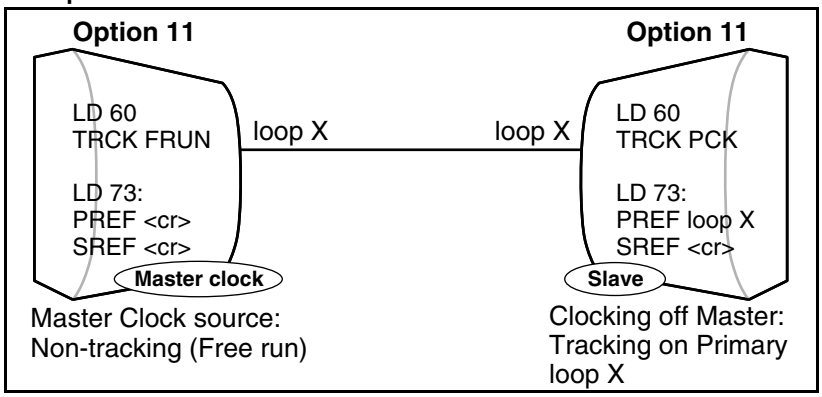
Some key points to keep in mind when designing Network Synchronization:

- Where possible, the Master Clock Source should always be from a Node Category/Stratum with higher clock accuracy, that is, a PBX connected to the Central Office (CO.) The CO is the Master and the PBX is the Slave.
- The source should not be in free-run itself (providing its own clock) unless it is operating in a fully independent network where the source acts as a Master (see “Plesiosynchronous operation” on page 88.)

- When connecting two PBXs together (no CO connections), the most reliable PBX should be the Master. Reliability here refers to Dual CPU/Dual Clock, battery back-up or stratum level of the clock controller.
- Avoid timing loops. A timing loop occurs when a clock using as its reference frequency a signal that it itself traceable to the output of that clock. The formation of such a closed timing loop leads to frequency instability and is not permitted. Timing loops are sometimes unavoidable on the secondary clock reference source.
- Ensure all CO/PBX links used as clock references have a traceable path back to the same stratum 1 clock source.

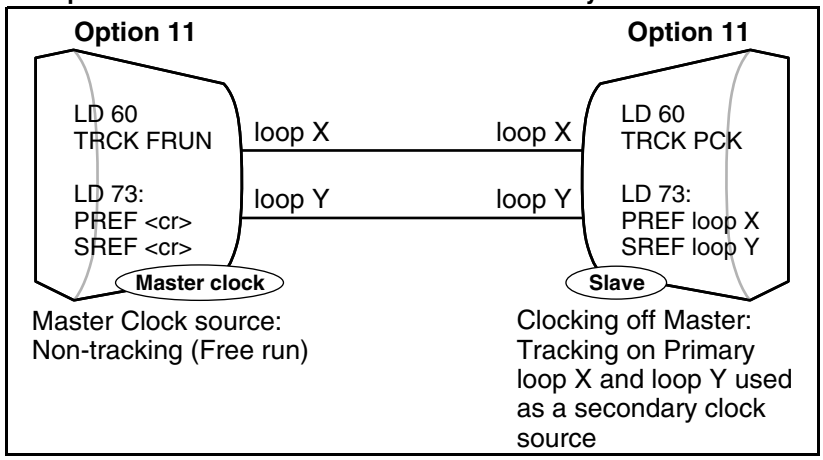
While it is beyond the scope of this discussion to provide detailed Network Synchronization, the following examples illustrate some of the basic concepts to achieve stable clocking.

Figure 2
Example 1: Isolated Private Network



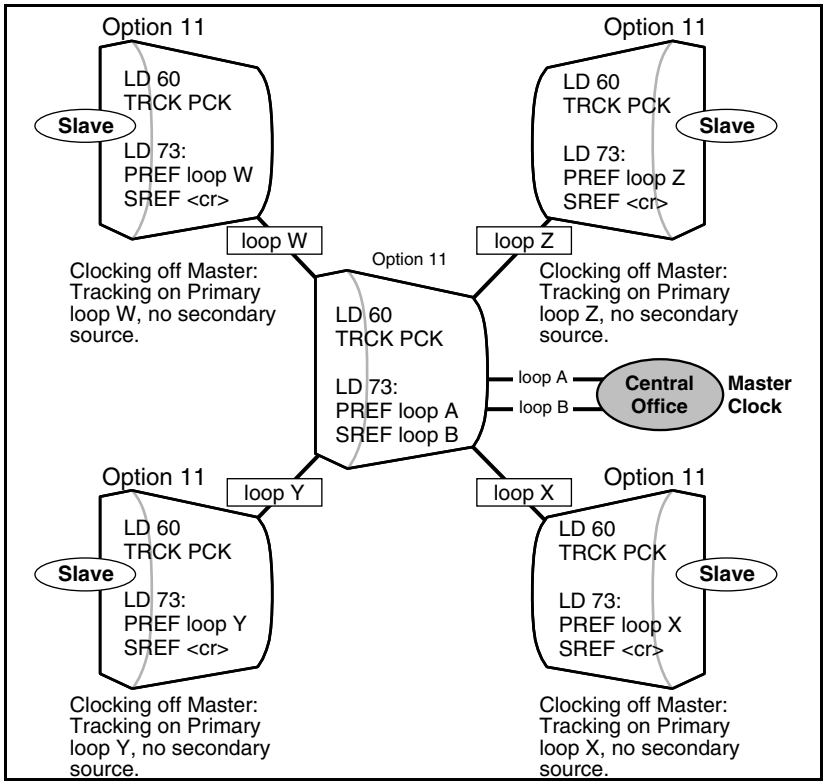
In this example, there is no digital connection to the Central Office.

Figure 3
Example 2: Isolated Private Network with Secondary Reference Clock



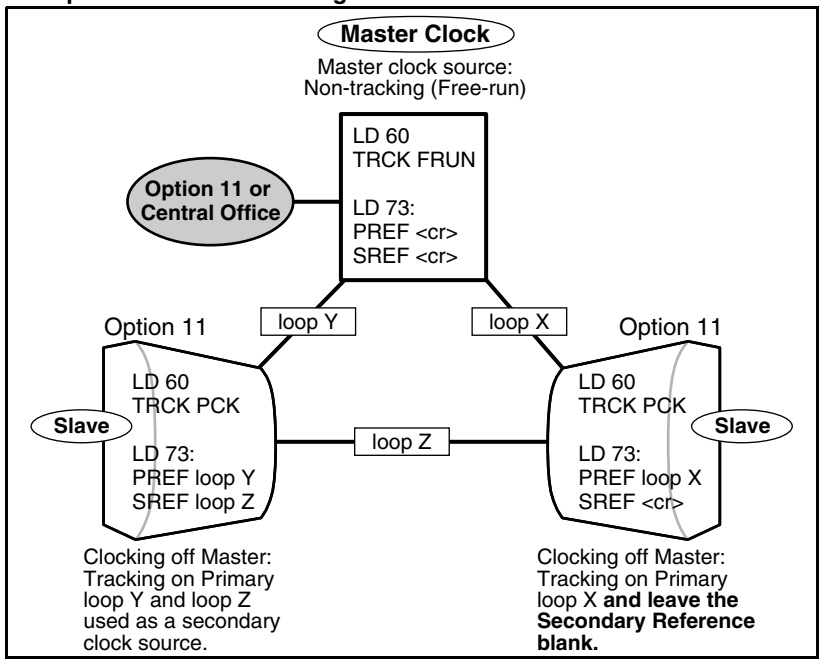
In this example, there is no digital connection to the Central Office. For tie lines between PBXs facilitated by a central office, clocking is derived from the PBX, not the CO. When a second Digital loop is available, it can be used as a Secondary Clock source in case the Primary Source fails.

Figure 4
Example 3: Clocking Hierarchy referenced to a Public Network Master Clock



This is an example of a “STAR” arrangement— one Hub PBX is linked to the Central Office and all other PBXs are connected as slaves. When a second Digital loop from the Meridian 1 which forms the hub of this network becomes available, it can be used as a Secondary Clock Source in case the Primary Source fails.

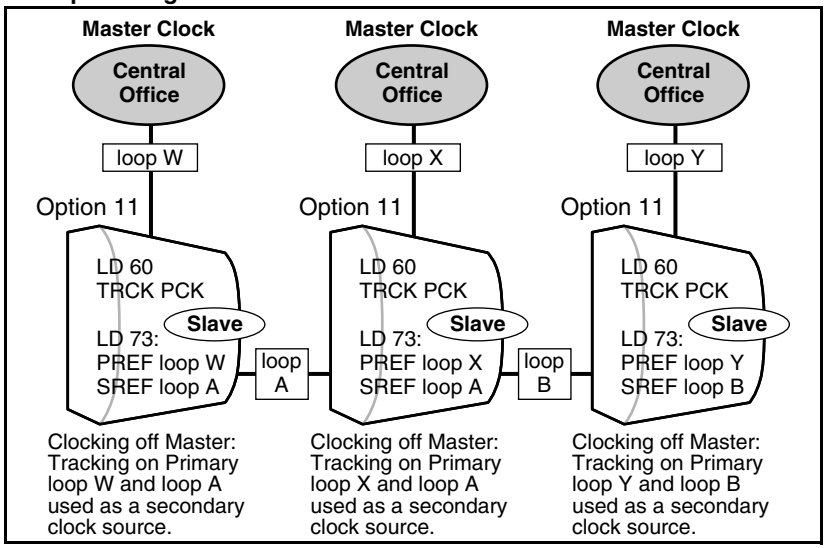
Figure 5
Example 4: Alternate Clocking from the same CO



In this case, a digital connection to the Central Office may exist (i.e. Loops X and Y). When a second Digital loop from the CO or Master M-1 becomes available, it can be used as a Secondary Clock Source in case the Primary Source fails.

To avoid timing loops, in example 4-4 the most reliable slave system should not have a Secondary Clock Source (SREF= <cr>). In this example, this is illustrated by the node which supports loops X and Z.

Figure 6
Example 5: Digital connection to the CO

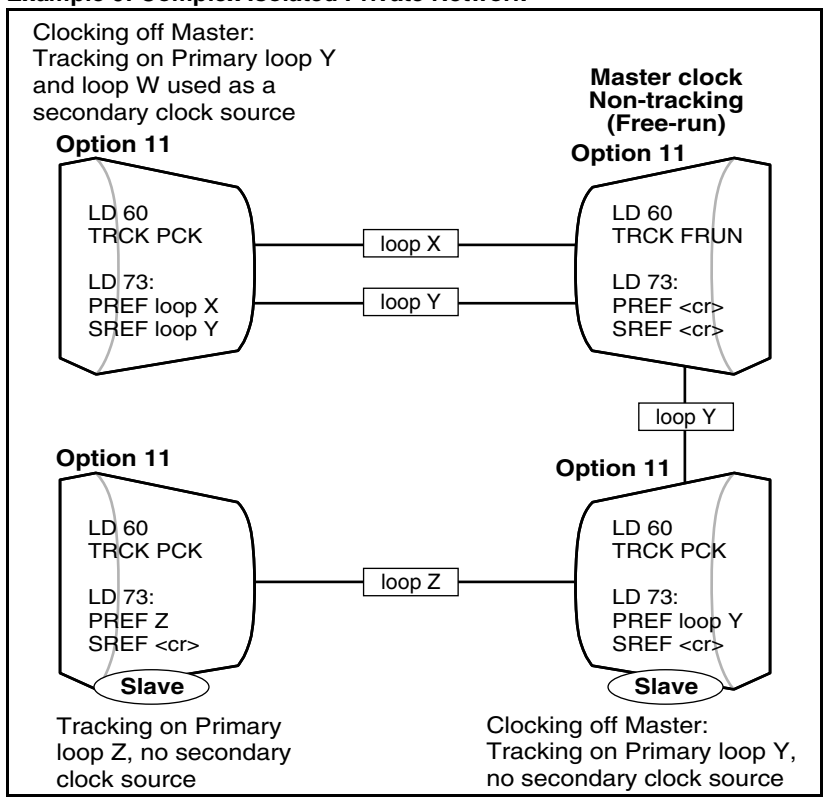


In this example, digital connections to the Central Office do exist. When a second Digital loop from the CO becomes available, it can be used as a Secondary Clock Source in case the Primary Source fails.

Slaves can track on each other as a secondary source since the chances of both links to the Central Offices going down at the same time are minimal.

All Central Offices must have a path back to the same stratum 1 source.

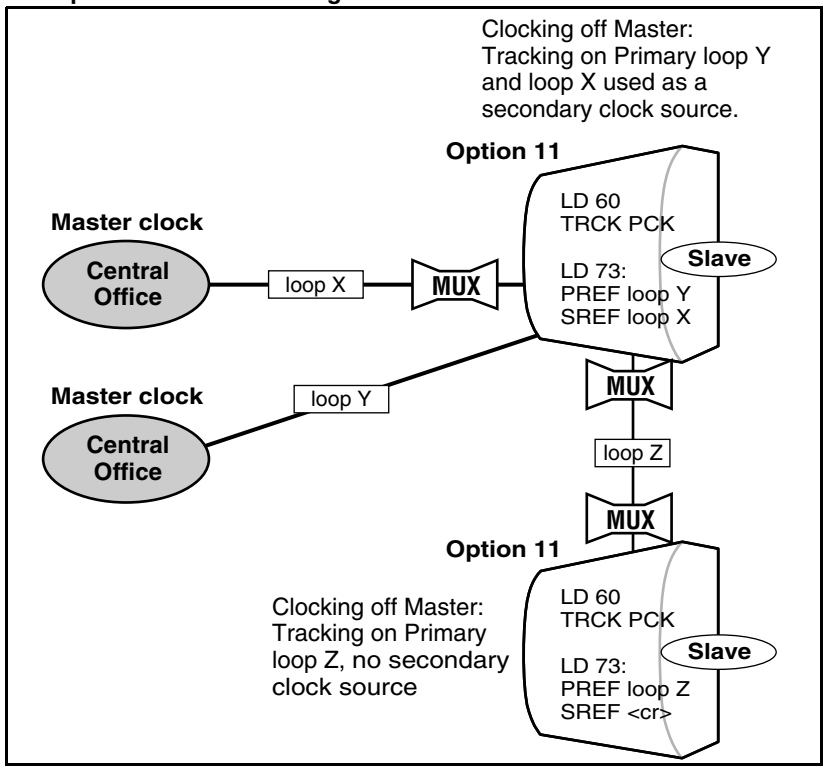
Figure 7
Example 6: Complex Isolated Private Network



Digital connections to the Central Office do not exist in this example. If it does, the switch connected to it will track off the CO and will in turn be used as a clock source to other nodes.

When a second Digital loop from the Master Meridian 1/SL-1 becomes available, it can be used as a Secondary Clock Source in case the Primary Source fails.

Figure 8
Example 7: Network Clocking with MUX



In this example, the direct connection to the CO (without a MUX) should be used as a primary clock reference since there is the least amount of hardware involved. The MUX must pass the clock and not generate its own clock; in other words, it must also be a slave (not Free Run). Synchronized clocking is required.

Modes of operation

There are two modes of operation, tracking mode and free run (non-tracking) mode.

Tracking mode

In tracking mode, the Primary Rate Interface (PRI) or Digital Trunk Interface (DTI) loop supplies an external clock reference to the on-board clock controller. Two PRI or DTI packs can operate in tracking mode, with one defined as the primary reference source for clock synchronization, the other defined as a secondary reference source. The secondary reference acts as a back-up to the primary reference.

Free run (non-tracking) mode

The clock synchronization for a PRI loop may operate in free-run mode if:

- the loop is not defined as the primary or secondary clock reference
- the primary and secondary references are disabled
- the primary and secondary references are in a local alarm state

Option 11C Clock Controller daughterboard

The Meridian 1 Option 11C supports a single on-board clock controller daughterboard, the NTAK20, located on either:

- the NTRB21 1.5 Mbyte DTI/PRI card
- the NTAK09 1.5 DTI/PRI card
- the NTAK10 2 Mbyte DTI card
- the NTAK79 2 Mbyte PRI card
- the NTBK50 2 Mbyte PRI card

The clock controller circuitry synchronizes the Option 11C to an external reference clock and generates and distributes the clock to the system. This enables the Option 11C to function either as a slave to an external clock or as a clocking master.

> ***Note:*** When configuring ISL over analogue trunks, clock controllers are not required.

Installation procedures

This section provides procedures on how to install a clock controller on Meridian 1 Options 51C, 61C, and 81C.

CAUTION
Do not deviate from the procedures described in this section. Call processing can stop if procedural steps are not followed properly.

Determine slots and shelves

The clock controller card installation site varies from system to system. Table 5 shows the systems, the shelves used, and the available slot or slots.

Table 5
Clock Controller shelves and slots

System	Shelf	Slot(s)
51C, 61C	NT6D39 CPU/NET	9
81C	NTDA35 Network Module	13

Set switches

Before installing a clock controller, set the switches as shown in Table 6, Table 7, and Table 8. Table 6 displays the settings for different vintages of the QPC471. Table 7 shows the settings for the QPC775. Table 8 shows settings for the NTRB53.

Table 6
Clock Controller switch settings for QPC471 vintage H

System	SW1				SW2				SW4			
	1	2	3	4	1	2	3	4	1	2	3	4
51C, 61C	on	on	on	on	off	off	off	off	off	on	*	*
81	off	off	off	off	off	off	off	off	off	on	*	*
81C	on	off	off	off	off	off	off	off	**	on	*	*
81C with Fiber Network	on	off	off	off	off	off	off	off	**	on	*	*
					*Cable length between the J3 faceplate connectors:							
					0–4.3 m (0–14 ft)						off	off
					4.6–6.1 m (15–20 ft)						off	on
					6.4–10.1 m (21–33 ft)						on	off
					10.4–15.2 m (34–50 ft)						on	on

* If there is only one clock controller card in the system, set to OFF. If there are two clock controller cards, determine the total cable length between the J3 connectors (no single cable can exceed 25 ft.) and set these two switch positions for this cable length, as shown above. The maximum total (combined) length is 50 ft. Set the switches on both cards to the same settings.

** Set to ON for clock controller 0. Set to OFF for clock controller 1.

Note: FNF based-systems the total clock path length is equal to the length of the NTRC49 cable used to connect between the two clock controller cards.

Table 7
Clock Controller switch settings for QPC775

System	SW2	SW3	SW4
51C, 61C	ON	OFF	ON
81C	OFF	OFF	ON

Table 8
Clock Controller switch settings for NTRB53

Multigroup/ Singlegroup	Machine Type # 1	Faceplate Cable Length (CC to CC)			Side Number	Machine Type #2
1	2	3	4		5	6
MultiGroup = Off SingleGroup = On	21E = Off 51, 61, 51C, 61C, 71, 81, 81C = On	Off	Off	0-14 ft	Side 0 = On Side 1 = Off	71, 81 = Off 21E, 51, 51C, 61, 61C, 81C = On
		Off	On	15-20 ft		
		On	Off	21-33 ft		
		On	On	34-50 ft		

Note: Switches 7 and 8 are not used.

Start the Clock Controller

The clock controller, when first enabled, is in free run mode. It stays in this mode for several minutes before being switched to tracking mode. Manual mode setting is possible using LD 60.

All clock controllers begin tracking within approximately 15 minutes.

Clock Controller commands

During the installation procedure you will use some of the clock controller commands available in Overlay 60. Refer to *Maintenance* (553-3001-511).

LD 39 commands with the NTRB53 Clock Controller

Command	Description	Pack/ Rel
DIS SCG x	Disable SCG card x (0 or 1). Not applicable for NTRB53 Clock Controller. Use LD 60 instead.	basic-1 basic-25.4
ENL SCG x	Enable SCG x (0 or 1). Not applicable for NTRB53 Clock Controller. Use LD 60 instead.	basic-1 basic-25.4
SCLK	Switch clock to other SCG. Functions with NTRB53 Clock Controller	basic-1 basic-25.4
STAT SCG x	Print status of SCG x (0 or 1). Prints normal status of NTRB53 (not full status)	basic-1 basic-25.4

Install or replace a Clock Controller on Option 51C, 61C half group

Task summary list

The following is a summary of the tasks in this section:

1 Install a clock controller Option 51C, 61C single group

Use Procedure 1 to install a clock controller on a Meridian 1 Option 51C, 61C half group.

Procedure 1
Install a clock controller Option 51C, 61C single group

1 Unpack and inspect circuit pack.

2 Determine the cabinet and shelf location. Refer to Table 5.

3 Set the clock controller switch. Refer to Table 6, Table 7, or Table 8.

4 Set the ENL/DIS toggle switch to DIS (disable).

5 If replacing a clock controller, do the following:

— Perform a status check on the clock with the SSCK command in LD 60. The new controller should have the same status.

Note: ERR0020 messages may be generated. These can usually be ignored. However, excessive clock switching should be avoided, especially when counters are near the maintenance or out-of-service thresholds. Excessive switching could generate threshold-exceeded messages or cause the PRI to be automatically disabled. Check the counters in LD 60. If necessary, reset the counters using the RCNT command.

d. Set the old card's faceplate ENL/DIS switch to DIS.

e. Disconnect the cables from the old clock controller card and remove the card from the shelf.

6 If the 3PE switches have not been modified to recognize the clock controller card, adjust them.

7 Set faceplate ENL/DIS switch to DIS.

8 Install the clock controller in the selected slot.

9 Run and connect cables

a. Connect the primary reference to J2.

b. If available, connect the secondary reference to J1.

c. Connect the cable between the two clocks to J3 on each controller card.

10 Set the faceplate ENL/DIS switch to ENL.

Note: Verify that the faceplate LED flashes three times to ensure the clock controller self test passed.

11 Enable the clock controller by entering ENL CC x in LD 60.

12 Set the error detection thresholds and clock synchronization controls in LD 73. (Optional with card replacement; required with new installation.)

13 To track on a primary or secondary reference clock, use LD 60. Use the following command:

TRCK PCK (for primary)

SCLK (for secondary)
FRUN (for free-run)

14 Issue the status check command, SSCK.

Note: In order for the clock enhancement feature in the clock controller (NTRB53) to be fully functional, the user must issue a manual INI to activate the clock enhancement feature.

End of Procedure

Install or replace a Clock Controller on Option 61C/81C

Task summary list

The following is a summary of the tasks in this section:

1 Install a Clock Controller on Option 61C/81C

Use Procedure 2 to install a clock controller on a Meridian 1 Option 81C.

Procedure 2
Install a Clock Controller on Option 61C/81C

1 Unpack and inspect circuit pack.

2 Determine the cabinet and shelf location. Refer to Table 5 on page 100.

3 Set the clock controller switch. Refer to Table 6 on page 101, Table 7 on page 101, or Table 8 on page 102

4 Set the ENL/DIS toggle switch to DIS (disable).

5 If replacing a clock controller, do the following:

a. Perform a status check on the clock with the SSCK command in LD 60. The new controller should have the same status.

b. Use LD 135 to STAT the CPU and switch if necessary

c. Disable the old card using LD 60.

Note 1: Do not disable an active clock or a clock associated with an active CPU

Note 2: ERR20 messages may be generated. These can usually be ignored. However, excessive clock switching should be avoided, especially when counters are near the maintenance or out-of-service thresholds. Excessive switching could generate threshold-exceeded messages or cause the PRI to be automatically disabled. Check the counters in LD 60. If necessary, reset the counters using the RCNT command.

a. Set the old card's faceplate ENL/DIS switch to DIS.

b. Disconnect the cables from the old clock controller card and remove it from the shelf.

6 Install the new clock controller in the selected slot.

7 Run and connect the cables

a. Connect the primary reference to J2.

b. If available, connect the secondary reference to J1.

c. Connect the cable from J3 on each controller card to the junctor group connector.

8 Set the faceplate ENL/DIS switch to ENL.

9 Execute the ENL CC X command in LD 60. The faceplate LED should go to the OFF state.

10 Set the error detection thresholds and clock synchronization controls in LD 73. (Optional if replacing card; required with new installation.)

11 To track on a primary or secondary reference clock, use LD 60. The command follows:

TRCK	PCK	(for primary)
	SCLK	(for secondary)
	FRUN	(for free-run)

12 Issue the status check command, SSCK.

13 (Optional) Wait two minutes before activating the newly installed clock controller with the LD 60 SWCK command.

Note: This will allow a smooth transition of the clock controller upgrade.

14 Repeat, if necessary, for the second clock controller.

End of Procedure

Upgrade to an NTRB53 Clock Controller on Option 61C/81C

Follow these procedures to replace the existing clock controller with the NTRB53 Clock Controller on Meridian 1 large systems.

Note: The NTRB53 Clock Controller cannot be combined with a QPC775 or a QPC471 card in one system.

Procedure 3
Remove old equipment

1 For dual core systems, ensure the clock controller card being removed is on the inactive core. If you need to switch cores go to LD 135 and enter:

LD 135	
SCPU	Switch cores
********	Exit the overlay

2 Disable the QPC775 or QPC471 Clock Controller card. At the prompt, enter:

LD 60	Load the program
SSCK x	Get status of system clock where x = 0 or 1

If the clock is active, switch clocks. At the prompt, enter:

SWCK	Switch system clock from active to standby
SSCK x	Get status of system clock where x = 0 or 1

Ensure the other clock controller is active and in the free run mode. At the prompt, enter:

SSCK x	Get status of system clock where x = 0 or 1
TRCK FRUN	Set clock controller tracking to free run

3 Disable the clock controller card you are removing. At the prompt, enter:

DIS CC x	Disable system clock controller where x = 0 or 1

4 Set the ENL/DIS switch to DIS on the card you are removing.

5 Tag and disconnect the cables to the card you are removing.

6 Unhook the locking devices on the card and pull it out of the card cage.

End of Procedure

Procedure 4
Installing new equipment

1 Set the ENB/DIS switch to DIS on the replacement card.

2 Set the option switches on the replacement card (NTRB53). Refer to Table 8, "Clock Controller switch settings for NTRB53," on page 102.

3 Insert the replacement card into the vacated slot and hook the locking devices.

4 Connect the reference cables (J1 and J2) to the replacement card.

CAUTION
Clock-to-Clock cable J3 should never be connected between the old clock (QPC471 or QPC775) and the new clock (NTRB53).

5 Set the ENB/DIS switch to ENB on the replacement card.

6 Software enable the card. At the prompt, enter:

LD 60	
ENL CC x	Enable clock controller card, where x = 0 or 1

7 Verify that the card is active. At the prompt, enter:

SSCK x	Get status of system clock where x = 0 or 1
********	Exit the overlay

8 Switch to the core with the new clock. At the prompt, enter:

LD 135
SCPU Switch CPU

Note: Wait two minutes before proceeding to the next step.

CAUTION
The following procedure to faceplate disable the active clock controller is potentially service impacting.

9 Faceplate disable the active clock controller to force the newly installed clock controller to activate.

10 Disconnect the Clock-to-Clock faceplate cable to J3 of the new clock controller card in the active CPU side.

CAUTION
Active calls will experience noise over local and trunk calls.

11 Verify that the clock controller is active. At the prompt, enter:

LD 60
SSCK Get status of the new system clock, where x = 0 or 1
TRCK PCK Track primary clock, where x = 0 or 1
RCNT Resets all alarm counters of all digital cards
******** Exit the overlay

Note: Replacing the clock controller will generate errors on the network equipment. It is recommended that all counters be reset.

12 To replace the remaining QPC775 or QPC471 clock controller card, tag and disconnect the cables to the card you are removing.

13 Unhook the locking devices on the card and pull it out of the card cage.

14 Set the ENB/DIS switch to DIS on the replacement card.

15 Set the option switches on the replacement card (NTRB53). Refer to Table 8, “Clock Controller switch settings for NTRB53,” on page 102.

16 Insert the replacement card into the selected slot and hook the locking devices.

17 Connect the reference cables (J1 and J2) and the clock-to-clock cable (J3) to the replacement card.

18 Set the ENB/DIS switch to ENB on the replacement card.

19 Software disable and enable the card. At the prompt, enter:

LD 60	
DID CC x	Disable clock controller card, where x=0 or 1
ENL CC x	Enable clock controller card, where x=0 or 1

20 Verify that the card is active. At the prompt, enter:

SSCK x	Get status of system clock, where x=0 or 1
****	Exit the overlay

Note: Wait two minutes before proceeding to next step.

21 Activate the new card and verify that it is active. At the prompt enter:

LD60	
SWCK	Switch system clock from active to standby
SSCK x	Get status of system clock, where x = 0 or 1
TRCK PCK	Track primary clock, where x = 0 or 1
RCNT	Reset alarm counters of all digital cards
****	Exit the overlay

22 Set the clock source to the status it was in before the replacement procedure.

23 Verify clock switch-over and tracking. At the prompt, enter:

SWCK	Switch system clock from active to standby
SSCK x	Get status of system clock, where x = 0 or 1
****	Exit the overlay

———————————— ***End of Procedure*** ————————————

CPP Memory Enhancement

Contents

The following are the topics in this section:

Description 112

Operating parameters 112

Upgrading for Release 25.40 or later software 113

Perform simultaneous software and memory upgrade 113

Back up current data 114

Test system redundancy 115

Make Core 0 active 115

Split the Cores 116

Upgrade Core 1 116

Memory upgrade 117

Install the software on Core/Net 122

Transfer call processing from Core/Net 0 to Core/Net 1 134

Upgrade Core/Net 0 135

Enable system redundancy 135

Test Core/Net 1 and Core/Net 0 136

Perform a data dump 137

Back out of a system software and hardware upgrade 138

Make Core 0 active 138

Split the Cores 139

Install the software on Core/Net 1 139

Transfer call processing from Core/Net 0 to Core/Net 1 151

Test Core/Net 1 152

Install the software on Core/Net 0 152

Enable system redundancy 152

Test Core/Net 1 and Core/Net 0 154
Perform a data dump 155

Reference list

The following are references for this section:

- *Hardware Replacement* (553-3001-520)

Description

The latest release of system software is shipped with new Meridian 1 systems. Introduced with Release 25.40 is a Call Processor Pentium (CP PII) card with 256 MB memory and a 256 MB Memory Upgrade Kit (NT4N19AA) for existing CP PII cards with 128 MB memory. Refer to Table 9 on page 112 for Call Processor cards.

Table 9
Call Processor cards

Call Processor	Description
A0810496	Call Processor with 128MB
NT4N64AA Rel 01	Call Processor (A0810496) upgraded from 128MB to 256MB with the CP PII Memory Upgrade Kit (NT4N19AA) and faceplate label.
NT4N64AA Rel 02 (A0844698)	Call Processor with 256MB

Operating parameters

Option 81C CPP systems with six or more network groups must upgrade their DRAM to 256 Mbyte memory at the same time as they upgrade to Release 25.40. Memory upgrades for existing systems consists of replacing the DIMM on the existing CPP cards, or installing Release 02 CPP cards with 256MB on board.

Note: Both boards must have the same memory configurations.

Option 81C systems configured with the NT4N64AA Rel 01 or NT4N64AA Rel 02 call processor cards require a minimum of Release 25.40 software.

Upgrading for Release 25.40 or later software

System upgrades fall into one of the following categories.

Table 10
Possible system upgrade configurations

Present System	Upgrade	Hardware	Comment
Option 51C/61C/81/81C CP2/CP3/CP4	Option 81C CPP and Release 25.40	256 Mbyte memory Call Processor card (NT4N64AA Rel 02)	Refer to *Software Conversion Procedures* (553-2001-320)
Option 81C CPP	Release 25.40	Existing processor card	This upgrade is not recommended for systems with six or more network groups.
Option 81C	Six or more network groups	NT4N64AA Rel 02 Call Processor card or the NT4N19AA Memory Upgrade Kits	N/A
Option 81C CPP (with six or more network groups)	Release 25.40	NT4N64AA Rel 02 Call Processor card or the NT4N19AA Memory Upgrade Kits	N/A

Use the tasks in this section to complete a software and memory upgrade. Please read the instructions before you begin.

Perform simultaneous software and memory upgrade

Install software on both Core hard drives. Follow the tasks below in order to complete the installation.

Note: To complete these procedures, the system must be working in redundant mode and connected to a terminal.

Back up current data

Before starting the upgrade check that:

- The system is operating in redundant mode. When the system is SPLIT, enter LD 135 and synchronize the memory and drives using the JOIN command.
- A backup copy of the customer database made with the data dump routine exists on 2 MB diskettes.

CAUTION

Loss of Data

Keep a backup copy of the database external to the switch when completing software/hardware upgrades.

Procedure 5
Backup current data

1 Load the Equipment Data Dump Program (LD 43). At the prompt, enter

LD 43 Load the program.

2 When “EDD000” appears on the terminal, enter

EDD Begin the data dump.

3 When “DATABASE BACKUP COMPLETE” appears on the terminal, enter

CAUTION

Loss of Data

If the data dump is not successful, do not continue; contact your technical support group. Correct any data dump problem before you continue.

**** Exit the program.

End of Procedure

Test system redundancy

Procedure 6
Test system redundancy

1 Test system redundancy. At the prompt enter:

LD 137	
STAT	Get the status of the hard disks.
TEST RDUN	Test redundancy.
DATA RDUN	Perform sector level checking on both hard disks.
TEST CMDU	Perform hard and floppy disk test.

2 Load LD 135 and check the status of the CPs, CNIs, and memory.

LD 135	
STAT CPU	Get the status of both CPs and memory.
STAT CNI	Get the status of all configured CNIs.

End of Procedure

Make Core 0 active

Either Core can be upgraded first. The decision to upgrade Core 1 first is for this example only.

Procedure 7
Make Core 0 active

1 If Core 1 is active, make Core 0 active. At the prompt enter:

LD 135	
STAT CPU	Get the status of the CPUs.
SCPU	Switch to Core 0.

End of Procedure

Split the Cores

Procedure 8
Split the cores

1 From the active side, split the cores.At the prompt enter:

```
LD 135
SPLIT          Enter Split on the active core.
****           Exit program.
```

The system is now in SPLIT mode.

End of Procedure

Upgrade Core 1

Procedure 9
Upgrade Core 1

1 Determine which of the following upgrades the system requires:

a Upgrade the software to Release 25.40 using the existing hardware. Continue with the “Install the software on Core/Net” on page 122.

b Upgrade the system with the 256 MB memory Call Processor card and Release 25.40 software. Go to step 2.

c Upgrade the software to Release 25.40 and replace the DIMM on the existing CP PII card. Go to step 3.

2 Remove the call processor card from Core 1 and replace with the NT4N64AA Rel 02 call processor card. Refer to *Hardware Replacement* (553-3001-520) for card replacement. Continue with the “Install the software on Core/Net” on page 122.

CAUTION

Damage to Equipment

Nortel Networks recommends that only properly trained distributor personnel perform this memory DIMM upgrade. Upgrading memory on CP cards involves some risk of damage to DIMM and the CP card. Personnel performing this upgrade do so at their own risk.

CAUTION

Service Interruption

Personnel should have spare CP cards on hand or risk installation delay or system down time. Nortel Networks assumes no responsibility for any damage incurred, installation delays due to board damage, or loss due to damage or system down time.

3 Remove the Call Processor card from Core 1 and replace the memory module with the NT4N19AA Memory Upgrade Kit. Follow the steps provided in “Memory upgrade”.

End of Procedure

Memory upgrade

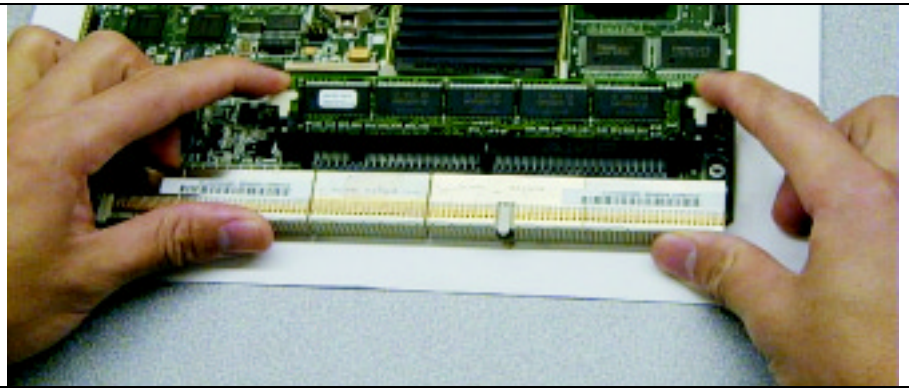
Procedure 10
Upgrade memory

1 Remove all cables connected to the faceplate of the standby Call Processor card on Core 1.

2 Hot unplug the card and place with the DIMM side-up on a flat, clean surface.

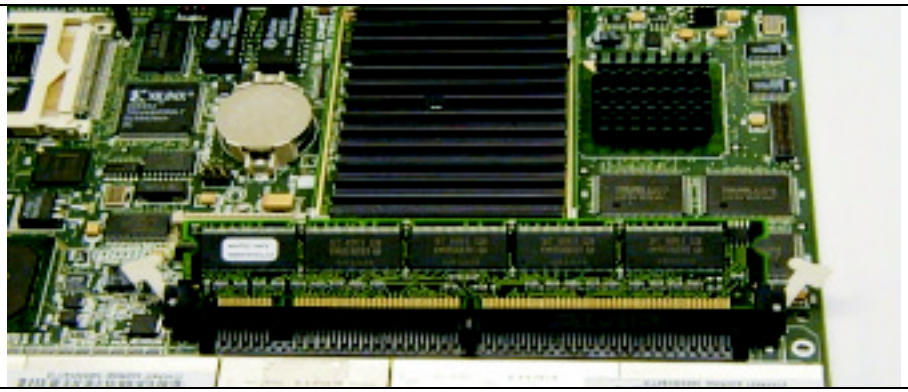
3 Hold the latches of the DIMM socket. See Figure 9 on page 118.

Figure 9
Latches



4 Press and rotate the latches from inside to outside carefully. See Figure 10.

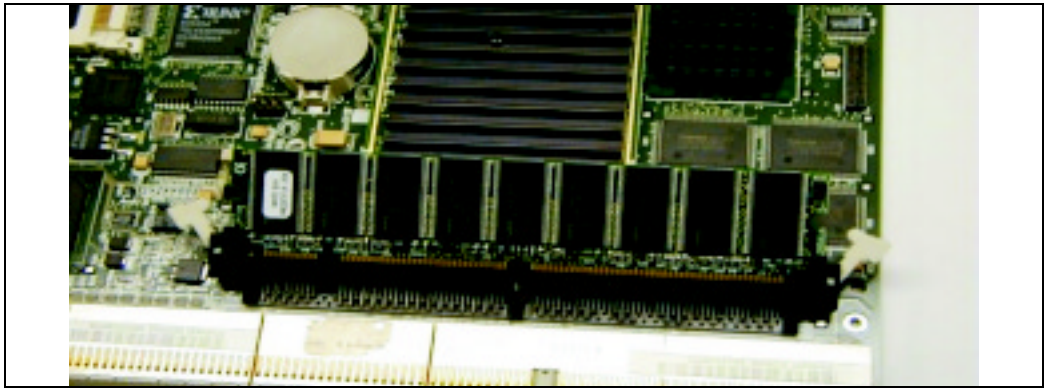
Figure 10
Rotate latches



5 Remove the 128 MB memory module.

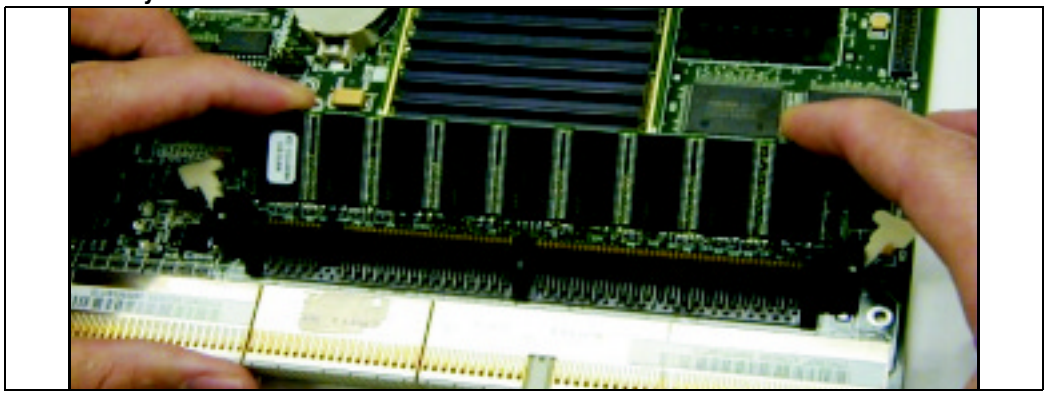
6 Keep the latches open and insert the 256MB module into the DIMM socket. Align the two notches on the module with the two keys in the DIMM socket. See Figure 11.

Figure 11
Insert 256MB module



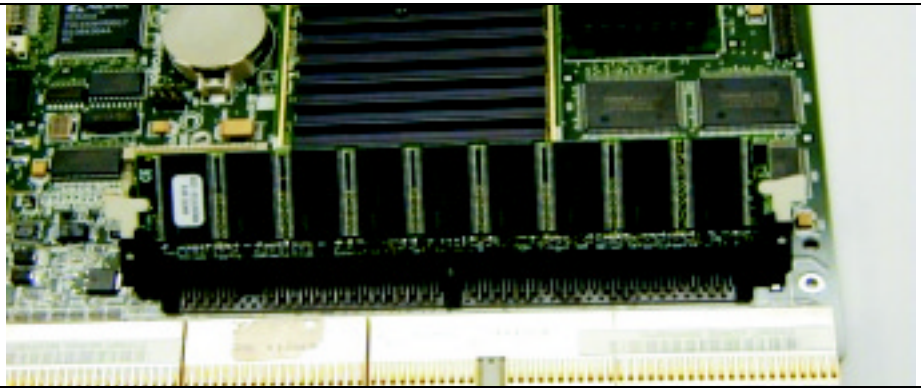
7 Hold the memory module as in Figure 12.

Figure 12
Hold memory module



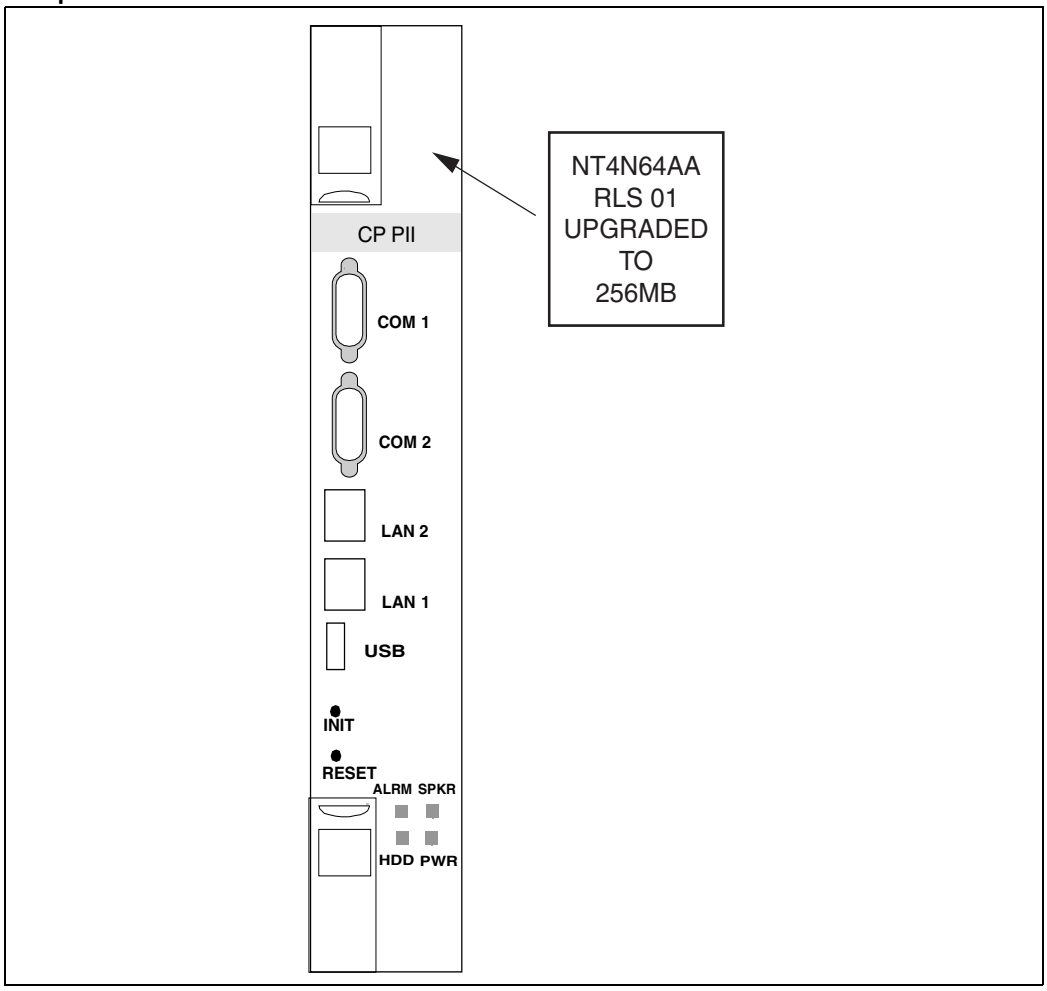
8 Push the module into the DIMM socket until it is locked by the latches. See Figure 13.

Figure 13
Lock latches



9 Put the faceplate label on the faceplate of the card. See Figure 14.

Figure 14
Faceplate label



10 Return the card to its slot and reconnect all original cables.

Continue with procedure 11, the “Install the software on Core/Net” on page 122.

End of Procedure

Install the software on Core/Net

Procedure 11
Install software on Core/Net 1

1 Install the CD-ROM into the CD-ROM drive in the cPCI MMDU:

a. Press the button on the CD-ROM drive to open the CD-ROM disk holder.

b. Place the CD-ROM disk into the holder with the disk label facing up. Use the four tabs to secure the CD-ROM disk.

c. Press the button to close the CD-ROM disk holder. Do not push the holder in by hand.

Note: If the CD-ROM is not in the CD-ROM drive, the installation will not continue. Insert the CD-ROM to continue.

2 Place the CP PII Install floppy disk into the cPCI MMDU floppy drive.

3 Press the RESET button on the CP PII. Press <CR> when prompted. Before the install menu runs, the system validates hard disk partitioning.

Note: If a problem is detected during the system verification, the installation stops, prints an error message, and aborts. If the verification is not successful, do not continue; contact your technical support organization.

The screen displays:

```
Nortel Meridian-1 Software/Database/BOOTROM CDROM INSTALL Tool (Version 28)
================================================================

                **
      ****    **     ****
      ****  *****   **********
      ************************  Nortel Networks - Meridian 1
      ****    ****   ****       Install Tool (Version 28)
      ****    ****   ****
      ****    ******************
      ****     ******  ******

             Copyright 1992 - 2001 Nortel Networks

      Please press <CR> when ready ...

>OBTAIN and CHECK SYSTEM CONFIGURATION
>Validate hard disk partitions
Do physical checking for hard drive, it will take five to six minutes.
Testing partition 0
100 percent completed!
Testing partition 1
100 percent completed!
Testing partition 2
100 percent completed!
Disk physical checking is completed!
Validate hard drive partition number and size ...

There are 3 partitions in disk 0:
The size of partition 0 of disk 0 is xx MB
The size of partition 1 of disk 0 is xx MB
The size of partition 2 of disk 0 is xx MB
Disk partitions and sectors checking is completed!
dosFsCheck for PART_C OK!
dosFsCheck for PART_D OK!
dosFsCheck for PART_E OK!
DosFsCheck is completed!
>Copy /f0/disk3311.sys to /u/disk3311.sys -
System Date and Time now is:
Friday 01-05-2001, 15:49:16
```

4 Press <CR> on the terminal to start the software installation from the following menu.

```
Nortel Meridian-1 Software/Database/BOOTROM CDROM INSTALL Tool (Version 28)
=========================================================================
M A I N   M E N U
The Software Installation Tool will install or upgrade Meridian-1 System Software, Database and
the CP-BOOTROM.
You will be prompted throughout the installation and given the opportunity to quit at any time.

Please enter:
<CR> ->          <u> - To Install menu
                 <t> - To Tools menu.
                 <q> - Quit

Enter Choice>
```

5 Insert keycode diskette.

```
Nortel Meridian-1 Software/Database/BOOTROM CDROM INSTALL Tool (Version 28)
=========================================================================

Please insert the diskette with the keycode file into the floppy
drive.


Please enter:

<CR> -> <a> - Continue with the keycode validation
               (the keycode diskette is in the floppy drive on
               Core 1).
          <q> - Quit.


Enter Choice>
```

6 Confirm that the keycode matches the CD ROM release.

The provided keycode authorizes the install of Release 25xx software (all subissues) for machine type 3311 (CPP processor on Option 81C).

Nortel Meridian-1 Software/Database/BOOTROM CDROM INSTALL Tool (Version 28)

==========

Please confirm that this keycode matches the CDROM Release

Please enter:

<CR> -> <y> - Yes, the keycode matches. Go on to Install Menu.
<n> - No, the keycode does not match. Try another keycode diskette.

Enter Choice>

7 If the Keycode matches the CD ROM release, you are prompted to select an option from the following install menu.

```
Nortel Meridian-1 Software/Database/BOOTROM CDROM INSTALL Tool (Version 28)
=========================================================================
I N S T A L L  M E N U
The Software Installation Tool will install or upgrade Meridian-1 System Software, Database
and the CP-BOOTROM.
You will be prompted throughout the installation and given the opportunity to quit at any time.


Please Enter:
<a>     To install Software, CP-BOOTROM.
<b>     To install Software, Database, CP-BOOTROM
<c>     To install Database only.
<d>     To install CP-BOOTROM only.
<t>     To go to the Tools menu.
<k>     To install Keycode only.
        For feature Expansion, use OVL143.
<p>     To install 3900 telephone Languages.
<q>     Quit.

Enter Choice>
```

Note: Press <CR> to select option <a>. The default database is not installed; instead, the existing customer database is left on disk, and then converted at the next sysload.

8 Insert the CDROM is in the CDROM drive.

```
Nortel Meridian-1 Software/Database/BOOTROM CDROM INSTALL Tool (Version 28)
=========================================================================
Please insert the installation CDROM into the drive on Core 1.
```

The labeled side of the CDROM should be side up in the CDROM tray.

Please enter:

<CR> -> <a> - CDROM is now in the drive. Continue with s/w checking.
<q> - Quit.

Enter Choice>

9 Confirm the software version.

Nortel Meridian-1 Software/Database/BOOTROM CDROM INSTALL Tool (Version 28)
==========

The installation CDROM contains version Release 25xx__.

Please enter:

<CR> -> <y> - Yes, this is the correct version. Continue.

<n> - No, this is not the correct version. Try another CDROM or keycode disk.

Enter Choice>

10 Review the Installation Status Summary.

```
-------------------------------------------------------------
                INSTALLATION STATUS SUMMARY
-------------------------------------------------------------
+=================+========+========+=======================+
|    Option       | Choice | Status |     Comment           |
+=================+========+========+=======================+
| SW: CD to disk  | yes    |        | Install for rel 25xx  |
+-----------------+--------+--------+-----------------------+
| Database        | no     |        |                       |
+-----------------+--------+--------+-----------------------+
| CP-BOOTROM      | yes    |        |                       |
+-----------------+--------+--------+-----------------------+

 Please enter:
 <CR> -> <Y> - Yes, start Installation.
         <n> - No, stop Installation. Return to the Main Menu.

 Enter Choice>
```

11 Confirm the Upgrade.

Nortel Meridian-1 Software/Database/BOOTROM CDROM INSTALL Tool (Version 28)

==========

You selected to upgrade the system from release: 25xx to release: 25xx.

This will erase all old system files.
Database files will NOT be erased. You may continue installing
the software or quit now and leave your system unchanged.

Please enter:

<CR> -> <y> - Continue with Upgrade.

<q> - Quit.

Enter Choice>

Pre-release 3 language groups

12 Select a PSDL file to install. The PSDL file contains the loadware for all downloadable cards in the system and loadware for M3900 series telephones.

Select one of the six PSDL files

<1> Global 10 Languages

<2> Western Europe 10 Languages

<3> Eastern Europe 10 Languages

<4> North America 6 Languages

<5> Spare Group A

<6> North America 6 Languages (Duplicate of **<4>**)

The languages contained in each selection are outlined as follows:

1 - English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Japanese Katakana.

* 2 - English, French, German, Spanish, Swedish, Norwegian, Danish, Finnish, Italian, Brazilian Portuguese.

* 3 - English, French, German, Dutch, Polish, Czech, Hungarian, Russian, Latvian, Turkish.

* 4 - English, Spanish, French, Brazilian Portuguese, Japanese Katakana, German.

* 5 - English, French, German, Spanish, Swedish, Italian, Norwegian, Portuguese, Finnish, Japanese Katakana.

* 6 - English, Spanish, French, Brazilian Portuguese, Japanese Katakana, German.

Release 3 language groups

13 Select a PSDL file to install. The PSDL file contains the loadware for all downloadable cards in the system and loadware for M3900 series telephones.

Select one of the six PSDL files

<1> Global 10 Languages

<2> Western Europe 10 Languages

<3> Eastern Europe 10 Languages

<4> North America 6 Languages

<5> Spare Group A

<6> North America 6 Languages (Duplicate of **<4>**)

The languages contained in each selection are outlined as follows:

1 – Global 10 Languages (Release 3) English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Japanese Katakana.

2 – Western Europe 10 Languages (Release 3) English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Danish.

3 – Eastern Europe 10 Languages (Release 3) English, French, German, Dutch, Polish, Czech, Hungarian, Russian, Latvian, Turkish.

4 – North America six Languages (Release 3) English, French, German, Spanish, Brazilian Portuguese, Japanese Katakana.

5 – Spare Group A.

6 – Spare Group B.

14 Continue with the installation.

Nortel Meridian-1 Software/Database/BOOTROM CDROM INSTALL Tool (Version 28)

==========

Software release 25xx was installed successfully on Core 1.

All files were copied from CDROM to the hard disk.

Please press <CR> when ready ...

15 Perform the CP-BOOTROM installation.

Nortel Meridian-1 Software/Database/BOOTROM CDROM INSTALL Tool (Version 28)

==========

You will now perform the CP-BOOTROM installation.

Note: You will be overriding existing CP-BOOTROM on hard disk. If you quit, Bootrom will be left unchanged

Please enter:

<CR> -> <a> - Continue with CP-BOOTROM install.

<q> - Quit.

Enter Choice>

16 Review the Status Summary.

```
------------------------------------------------------------
                INSTALLATION STATUS SUMMARY
------------------------------------------------------------
+=================+========+========+=======================+
|    Option       | Choice | Status |     Comment           |
+=================+========+========+=======================+
| SW: CD to disk  | yes    | ok     |   from 2530_ to 2540  |
+-----------------+--------+--------+-----------------------+
| Database        | no     |        |                       |
+-----------------+--------+--------+-----------------------+
| CP-BOOTROM      | yes    | ok     |                       |
+-----------------+--------+--------+-----------------------+

Please press <CR> when ready ...
```

17 Enter “q” to leave the installation program.

Nortel Meridian-1 Software/Database/BOOTROM CDROM INSTALL Tool (Version 28)

==========

I N S T A L L M E N U

The Software Installation Tool will install or upgrade Meridian-1 System Software, Database and the CP-BOOTROM.

You will be prompted throughout the installation and given the opportunity to quit at any time.
Please enter:

<a>	To install Software, CP-BOOTROM.
<b>	To install Software, Database, CP-BOOTROM
<c>	To install Database only.
<d>	To install CP-BOOTROM only.
<t>	To go to the Tools menu.
<k>	To install Keycode only. For feature Expansion, use OVL143.
<p>	To install 3900 telephone Languages.
<q>	Quit.

Enter Choice>

18 Enter “y” to confirm Quit.

Nortel Meridian-1 Software/Database/BOOTROM CDROM INSTALL Tool (Version 28)

==========

You selected to Quit. Please confirm.

Please enter:

<CR> ->	<y> - Yes, Quit.
	<n> - No, DO NOT Quit.

Enter Choice>

19 Choose either Reboot or Return to the Main Menu

Note: Remove the Install diskette from the floppy drive(s) before rebooting.

Nortel Meridian-1 Software/Database/BOOTROM CDROM INSTALL Tool (Version 28)

==========

You selected to Quit the Software Installation Tool.
You may reboot the system or return to the Main Menu.
Before rebooting the system, remove Install diskette from the floppy drive(s).

DO NOT REBOOT USING BUTTON!!

Please enter:

<CR> -> <a> - Reboot the system.

<m> - Return to the Main menu.

Enter Choice>

20 The system automatically performs a sysload and several messages appear on the system terminal. Wait for “DONE” and then the “INI” message to display before you continue.

Database conversion occurs during sysload.

Verify that the following message appears on the system terminal:

DATA CONVERSION
RELEASE 25.XX TO RELEASE 25.XX

21 Confirm that Release 25.xx software is installed and is working on Core/Net 1:

LD 135	Load the program.
STAT CPU	Display the CPU status.
STAT CNI	Display the cCNI status.
STAT MEM	Display memory status on CPUs.

22 Check the software version.

Use LD 22 to print the software issue and release. At the prompt enter:

LD 22

REQ	ISS
****	Exit the program.

End of Procedure

Transfer call processing from Core/Net 0 to Core/Net 1

CAUTION

Service Interruption

The following procedure to transfer call processing causes service interruptions.
Time your procedure to minimize the effect of any breaks in service.

Procedure 12
Transfer call processing

1 From Core/Net 0, the active side, transfer call processing to the upgraded Core/Net 1. At the prompt enter:

LD 135

CUTOVR	Transfer call processing from active core to standby core. This will cause a service interruption.

Call processing is now switched from Core/Net 0 to Core/Net 1.

2 Test Call Processing. This includes the following:

- **a** Check for dial tone.
- **b** Make internal, external, and network calls.
- **c** Check attendant console activity.
- **d** Check DID trunks.
- **e** Check any auxiliary processors.

End of Procedure

Upgrade Core/Net 0

Start at "Upgrade Core 1" on page 116 and repeat the procedures for Core/Net 0.

Continue with the following procedures after completing "Check the software version." on page 133.

Enable system redundancy

CAUTION

Service Interruption

The following procedure to transfer call processing causes service interruptions.
Time your procedure to minimize the effect of any breaks in service.

Procedure 13
Transfer call processing

1 Transfer call processing from the active core 1 to the standby core 0. At the prompt enter:

LD 135

CUTOVR	Transfer call processing from active core to standby core. This will cause a service interruption.

Note: The CUTOVR command is necessary to ensure that the second upgraded core is capable of call processing.

2 Test Call Processing. This includes, but is not limited to the following:

- **a** Check for dial tone.
- **b** Make internal, external, and network calls.
- **c** Check attendant console activity.
- **d** Check DID trunks.
- **e** Check any auxiliary processors.

End of Procedure

Procedure 14
Enable system redundancy

1 From the active CPU, Core/Net 0, enable redundancy. At the prompt enter:

LD 135

JOIN	Synchronize the memory and drives.

End of Procedure

Test Core/Net 1 and Core/Net 0

Procedure 15
Test both cores

From the active CPU, Core/Net 0, perform these tests:

1 Perform a redundancy sanity test using the following sequence. At the prompt enter:

LD 135

STAT CNI	Get the status of the cCNI cards.
STAT CPU	Get the status of the CPU and memory.
TEST CNI	Test each cCNI card (core, slot).
STAT SUTL	Get the status of the System Utility (main and transition) cards.
TEST SUTL	Test the System Utility (main and transition) cards.
TEST IPB	Test the Interprocessor Bus
TEST LCD	Test the LCDs.
TEST LED	Test the LEDs.

2 Test system redundancy. At the prompt enter:

LD 137

STAT	Get the status of the hard disks.
TEST RDUN	Test redundancy
DATA RDUN	Perform sector level checking on both hard disks
TEST CMDU	Perform hard and floppy disk test.

3 Switch to the inactive CPU. At the prompt enter:

LD 135	
SCPU	Switch to the inactive CPU, Core/Net 1

4 Test Core/Net 1. At the prompt enter:

LD 135	
STAT CNI	Get the status of cCNI (both main and transition) cards.
STAT CPU	Get the status of both Cores and redundancy.
TEST CNI	Test the cCNI (both main and transition) cards.
STAT SUTL	Get the status of the System Utility card.
TEST SUTL	Test System Utility card.
TEST IPB	Test Interprocessor Bus.
TEST LCD	Test LCDs.
TEST LED	Test LEDs

5 Clear the display and minor alarms on both Cores. At the prompt enter:

CDSP	Clear the displays on the Cores.
CMAJ	Clear all major alarms.
CMIN ALL	Clear all minor alarms.
****	Exit the program.

6 If desired, switch back to Core/Net 0. At the prompt enter:

LD 135	
SCPU	Switch to the inactive CPU, Core/Net 0

End of Procedure

Perform a data dump

Procedure 16
Perform a data dump

1 At the prompt, enter

LD 43	Load the program

2 Insert a floppy disk into the cPCI MMDU to capture the backup.

3 When “EDD000” appears on the terminal, enter

EDD Begin the data dump

4 When “DATABASE BACKUP COMPLETE” appears on the terminal, enter

CAUTION

Loss of Data

If the data dump is not successful, do not continue; contact your technical support group. Correct any data dump problems before you continue.

**** Exit the program

The parallel reload procedure is complete.

End of Procedure

Back out of a system software and hardware upgrade

To back out of a CP PII system software and hardware upgrade the following tasks must be completed.

- Determine which core is active.
- Split the cores.
- Revert to the old memory configuration, if required.
- Install the original release of software.

Perform the following procedures in order.

Make Core 0 active

Either Core can be downgraded first. The decision to downgrade Core 1 first is for this example only.

Procedure 17
Make Core 0 active

1 If Core 1 is active, make Core 0 active. At the prompt enter:

LD 135	
STAT CPU	Get the status of the CPUs.
SCPU	Switch to Core 0.

End of Procedure

Split the Cores

Procedure 18
Split the cores

1 From the active Core 0, split the cores. At the prompt enter:

LD 135	Load the program.
SPLIT	Enter Split on the active core.
****	Exit the program.

The system is now in split mode.

End of Procedure

Install the software on Core/Net 1

Procedure 19
Install the original release of software

1 Install the CD-ROM into the CD-ROM drive in the cPCI MMDU:

a. Press the button on the CD-ROM drive to open the CD-ROM disk holder.

b. Place the CD-ROM disk into the holder with the disk label facing up. Use the four tabs to secure the CD-ROM drive.

c. Press the button again to close the CD-ROM disk holder. **Do not** push the holder in by hand.

Note: If the CD-ROM is not in the CD-ROM drive, the installation will not continue. Insert the CD-ROM to continue.

2 Place the Install diskette with the original software release into the cPCI MMDU floppy drive.

3 Press the manual RESET button on the CP PII card faceplate. Before the install menu runs, the system validates hard disk partitioning which takes about five minutes.

Note: If a problem is detected during the system verification, the installation stops, prints an error message, and aborts. If the verification is not successful, do not continue; contact your technical support group.

The screen displays:

```
Nortel Meridian-1 Software/Database/BOOTROM CDROM INSTALL Tool (Version xx)
================================================================
                 **
                ***
      ****    **    ****
      ****  *****   **********
      **** *******  **********
      ************************** Nortel Networks - Meridian 1
      ***    ****   ****     Install Tool (Version xx)
      ****   ****   ****
      ****   ****   ****
      ****   ****   ****
      ****   ******************
      ****    ******  ******
      ****     ***    ***

            Copyright 1992 - 1999 Nortel Networks, Inc.
Please press <CR> when ready ...

>OBTAIN and CHECK SYSTEM CONFIGURATION
>Validate hard disk partitions
Do physical checking for hard drive, it will take five to six minutes.
Please wait ...
Testing partition 0
100 percent completed!
Testing partition 1
100 percent completed!
Testing partition 2
100 percent completed!
Disk physical checking is completed!
Validate hard drive partition number and size ...
There are 3 partitions in disk 0:
The size of partition 0 of disk 0 is xx MB
The size of partition 1 of disk 0 is xx MB
The size of partition 2 of disk 0 is xx MB
Disk partitions and sectors checking is completed!
dosFsCheck for PART_C OK!
dosFsCheck for PART_D OK!
dosFsCheck for PART_E OK!
DosFsCheck is completed!
>Copy /f0/disk3311.sys to /u/disk3311.sys -
System Date and Time now is:
Friday 01-05-2001, 15:49:16
```

4 Press <CR> on the terminal to start the software installation from the following menu.

```
Nortel Meridian-1 Software/Database/BOOTROM CDROM INSTALL Tool (Version xx)
=========================================================================
M A I N   M E N U

The Software Installation Tool will install or upgrade
Meridian-1 System Software, Database and the CP-BOOTROM.
You will be prompted throughout the installation and given the
opportunity to quit at any time.

Please enter:
<CR> -> <u> - To Install menu
        <t> - To Tools menu.
        <q> - Quit

Enter Choice>
```

5 Insert keycode diskette.

```
Nortel Meridian-1 Software/Database/BOOTROM CDROM INSTALL Tool (Version xx)
=============================================================

Please insert the diskette with the keycode file into the floppy
drive.

Please enter:
<CR> -> <a> - Continue with the keycode validation
        (the keycode diskette is in the floppy drive on Core 1).
        <q> - Quit.

Enter Choice
```

6 Confirm that the keycode matches the CD ROM release.

The provided keycode authorizes the install of Release 25xx__ software for generic 3311 (CPP processor on Option 81C).

Nortel Meridian-1 Software/Database/BOOTROM CDROM INSTALL Tool (Version xx)

==========

Please confirm that this keycode matches the CDROM Release

Please enter:

<CR> -> <y> - Yes, the keycode matches. Go on to Install Menu.
<n> - No, the keycode does no match. Try another keycode diskette.

Enter Choice>

7 When the screen displays the Install Menu, enter choice “b” to install the database.

Note: The database has to be reinstalled. A database cannot be converted down.

Nortel Meridian-1 Software/Database/BOOTROM CDROM INSTALL Tool (Version xx)

==========

I N S T A L L M E N U

The Software Installation Tool will install or upgrade
Meridian-1 System Software, Database and the CP-BOOTROM.
You will be prompted throughout the installation and given the
opportunity to quit at any time.

Please enter:

<a> To install Software, CP-BOOTROM.

<b> To install Software, Database, CP-BOOTROM

<c> To install Database only.

<d> To install CP-BOOTROM only.

<t> To go to the Tools menu.

<k> To install Keycode only.
For feature Expansion, use OVL143.

<p> To install 3900 telephone Languages.

<q> Quit.

Enter Choice>

8 Insert the CDROM into the CDROM drive.

Nortel Meridian-1 Software/Database/BOOTROM CDROM INSTALL Tool (Version xx)

==========

Install utility will install Release 25xx s/w for software
generic 3311 (CPP processor on Option 81C) on your system.
Please insert the installation CDROM into the drive on Core 1.

The labeled side of the CDROM should be side up in the CDROM tray.

Please enter:

<CR> -> <a> - CDROM is now in the drive.
Continue with installation.
<q> - Quit.

Enter Choice>

9 Review the Installation Status Summary

```
------------------------------------------------------------
                  INSTALLATION STATUS SUMMARY
------------------------------------------------------------
+=================+========+========+=======================+
|    Option       | Choice | Status |     Comment           |
+=================+========+========+=======================+
| SW: CD to disk  | yes    |        | Install for rel 25xx  |
+-----------------+--------+--------+-----------------------+
| Database        | yes    |        |                       |
+-----------------+--------+--------+-----------------------+
| CP-BOOTROM      | yes    |        |                       |
+-----------------+--------+--------+-----------------------+
 Please enter:
 <CR> -> <Y> - Yes, start Installation.
         <n> - No, stop Installation. Return to the Main Menu.

 Enter Choice>
```

10 Confirm the Upgrade.

Nortel Meridian-1 Software/Database/BOOTROM CDROM INSTALL Tool (Version xx)

==========

You selected to upgrade the system from release: 25xx to release 25xx.

This will erase all old system files.

Database files will not be erased. You may continue installing the software or quit now and leave your system unchanged.

Please enter:

<CR> -> <a> - Continue with Upgrade
<q> - Quit.

Enter Choice>

Pre-release 3 language groups

11 Select a PSDL file to install. The PSDL file contains the loadware for all downloadable cards in the system and loadware for M3900 series telephones.

Select one of the six PSDL files

<1> Global 10 Languages

<2> Western Europe 10 Languages

<3> Eastern Europe 10 Languages

<4> North America 6 Languages

<5> Spare Group A

<6> North America 6 Languages (Duplicate of **<4>**)

The languages contained in each selection are outlined as follows:

1 - English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Japanese Katakana.

* 2 - English, French, German, Spanish, Swedish, Norwegian, Danish, Finnish, Italian, Brazilian Portuguese.

* 3 - English, French, German, Dutch, Polish, Czech, Hungarian, Russian, Latvian, Turkish.

* 4 - English, Spanish, French, Brazilian Portuguese, Japanese Katakana, German.

* 5 - English, French, German, Spanish, Swedish, Italian, Norwegian, Portuguese, Finnish, Japanese Katakana.

* 6 - English, Spanish, French, Brazilian Portuguese, Japanese Katakana, German.

Release 3 language groups

12 Select a PSDL file to install. The PSDL file contains the loadware for all downloadable cards in the system and loadware for M3900 series telephones.

Select one of the six PSDL files

<1> Global 10 Languages

<2> Western Europe 10 Languages

<3> Eastern Europe 10 Languages

<4> North America 6 Languages

<5> Spare Group A

<6> North America 6 Languages (Duplicate of **<4>**)

The languages contained in each selection are outlined as follows:

1 – Global 10 Languages (Release 3) English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Japanese Katakana.

2 – Western Europe 10 Languages (Release 3) English, French, German, Spanish, Swedish, Italian, Norwegian, Brazilian Portuguese, Finnish, Danish.

3 – Eastern Europe 10 Languages (Release 3) English, French, German, Dutch, Polish, Czech, Hungarian, Russian, Latvian, Turkish.

4 – North America six Languages (Release 3) English, French, German, Spanish, Brazilian Portuguese, Japanese Katakana.

5 – Spare Group A.

6 – Spare Group B.

13 Continue with the installation.

Nortel Meridian-1 Software/Database/BOOTROM CDROM INSTALL Tool (Version xx)

==========

Software release 25xx was installed successfully on Core 1.

All files were copied from CDROM to the hard disk.

Please press <CR> when ready ...

14 Install the archived database from the backup diskette.

Note: Insert the archived database diskette into the floppy drive.

Select option “a” from the following menu.

```
Nortel Meridian-1 Software/Database/BOOTROM CDROM INSTALL Tool (Version xx)
================================================================

You will now perform the database installation.

Note: If you are installing the Database from a floppy disk,
      please insert the correct disk now.


Please enter:
<CR> -> <a> Install CUSTOMER Database
            (the customer database diskette must be in the
            core 1 disk drive)
       <b> Install DEFAULT Database.
       <c> Transfer the previous system Database.
       <e> Check the Database that exists on the hard disk.
       <q> Quit.


Enter Choice>
```

15 Perform the CP-BOOTROM installation.

```
Nortel Meridian-1 Software/Database/BOOTROM CDROM INSTALL Tool (Version xx)
================================================================

You will now perform the CP-BOOTROM Installation.

Note: You will be overriding existing CP-BOOTROM on hard disk.
    If you quit, BOOTROM will be left unchanged


Please enter:
<CR> -> <a> Continue with CP-BOOTROM install.
      <q> Quit.


Enter Choice>
```

16 Review the Installation Status Summary

```
------------------------------------------------------------
                  INSTALLATION STATUS SUMMARY
------------------------------------------------------------
+=================+========+========+=======================+
|    Option       | Choice | Status |     Comment           |
+=================+========+========+=======================+
| SW: CD to disk  | yes    | ok     | from 25xx to 25xx     |
+-----------------+--------+--------+-----------------------+
| Database        | yes    | ok     | from 25xx to 25xx     |
+-----------------+--------+--------+-----------------------+
| CP-BOOTROM      | yes    | ok     |                       |
+-----------------+--------+--------+-----------------------+
 Please press <CR> when ready ...
```

17 Enter “q” to leave the installation program.

Nortel Meridian-1 Software/Database/BOOTROM CDROM INSTALL Tool (Version xx)

==========

I N S T A L L M E N U

The Software Installation Tool will install or upgrade
Meridian-1 System Software, Database and the CP-BOOTROM.
You will be prompted throughout the installation and given the
opportunity to quit at any time.

Please enter:

<a>	To install Software, CP-BOOTROM.
<b>	To install Software, Database, CP-BOOTROM
<c>	To install Database only.
<d>	To install CP-BOOTROM only.
<t>	To go to the Tools menu.
<k>	To install Keycode only. For feature Expansion, use OVL143.
<p>	To install 3900 telephone Languages.
<q>	Quit.

Enter Choice>

18 Enter “y” to confirm Quit.

```
Nortel Meridian-1 Software/Database/BOOTROM CDROM INSTALL Tool (Version xx)
=====================================================================
You selected to Quit. Please confirm.

Please enter:
<CR> ->     <y> - Yes, Quit.
            <n> - No, DO NOT Quit.

Enter Choice>
```

19 Choose either Reboot or Return to the Main Menu.

Note: Remove the database diskette from the disk drive before rebooting.

```
Nortel Meridian-1 Software/Database/BOOTROM CDROM INSTALL Tool (Version xx)
=====================================================================
You selected to Quit the Software Installation Tool.
You may reboot the system or return to the Main Menu.
Before rebooting the system, remove Install diskette from the
floppy drive(s).
---------------------------------------------------------------
DO NOT REBOOT USING BUTTON!!
---------------------------------------------------------------
Please enter:
<CR> ->     <a> - Reboot the system.
            <m> - Return to the Main menu.
Enter Choice>
```

20 The system automatically performs a sysload and several messages appear on the system terminal. Wait for “DONE” and then the “INI” message to display before you continue.

Verify that the following message appears on the system terminal:

```
DATA CONVERSION
RELEASE 25.xx TO RELEASE 25.xx
```

21 Confirm that Release 25.xx software is installed and working on Core/Net 1:

LD 135	Load the program.
STAT CPU	Display the CPU status.
STAT CNI	Display the cCNI status.

22 Check the software version.

Use LD 22 to print the software issue and release. At the prompt enter:

LD 22	
REQ	ISS
****	Exit the program.

End of Procedure

Transfer call processing from Core/Net 0 to Core/Net 1

CAUTION

Service Interruption

The following procedure to transfer call processing causes service interruptions.
Time your procedure to minimize the effect of any breaks in service.

Procedure 20
Transfer call processing

1 From Core/Net 0, the active side, transfer call processing to Core/Net 1. At the prompt enter:

LD 135	Load the program.
CUTOVR	The inactive CP become active.

Call processing is now switched from Core/Net 0 to Core/Net 1.

End of Procedure

Test Core/Net 1

Test Call Processing. This includes, but is not limited to the following:

1 Check for dial tone.

2 Make internal, external, and network calls.

3 Check attendant console activity.

4 Check DID trunks.

5 Check any auxiliary processors.

Install the software on Core/Net 0

Start at "Install the software on Core/Net 1" on page 139 and repeat the procedures for Core/Net 0.

Continue with the following after completing "Check the software version." on page 151.

Enable system redundancy

CAUTION

Service Interruption

The following procedure to transfer call processing causes service interruptions.
Time your procedure to minimize the effect of any breaks in service.

Procedure 21
Transfer call processing

1 Transfer call processing from the active core 1 to the standby core 0. At the prompt enter:

LD 135

CUTOVR	Transfer call processing from active core to standby core. This will cause a service interruption.

Note: The CUTOVR command is necessary to ensure that the second upgraded core is capable of call processing.

2 Test Call Processing. This includes, but is not limited to the following:

a Check for dial tone.

b Make internal, external, and network calls.

c Check attendant console activity.

d Check DID trunks.

e Check any auxiliary processors.

End of Procedure

Procedure 22
Enable system redundancy

1 From the active CPU, Core/Net 0, enable redundancy. At the prompt enter:

```
LD 135
JOIN          Synchronize the memory and drives.
```

End of Procedure

Test Core/Net 1 and Core/Net 0

Procedure 23
Test both cores

From the active CPU, Core/Net 0, perform these tests:

1 Perform a redundancy sanity test using the following sequence. At the prompt enter:

LD 135	
STAT CNI	Get the status of the cCNI cards.
STAT CPU	Get the status of the CPU and memory.
TEST CNI	Test each cCNI card (core, slot).
STAT SUTL	Get the status of the System Utility (main and transition) cards.
TEST SUTL	Test the System Utility (main and transition) cards.
TEST IPB	Test the Interprocessor Bus
TEST LCD	Test the LCDs.
TEST LED	Test the LEDs.

2 Test system redundancy. At the prompt enter:

LD 137	
STAT	Get the status of the hard disks.
TEST RDUN	Test redundancy
DATA RDUN	Perform sector level checking on both hard disks
TEST CMDU	Perform hard and floppy disk test.

3 Switch to the inactive CPU. At the prompt enter:

LD 135	
SCPU	Switch to the inactive CPU, Core/Net 1

4 Test Core/Net 1. At the prompt enter:

LD 135	
STAT CNI	Get the status of cCNI (both main and transition) cards.
STAT CPU	Get the status of both Cores and redundancy.
TEST CNI	Test the cCNI (both main and transition) cards.

STAT SUTL	Get the status of the System Utility card.
TEST SUTL	Test System Utility card.
TEST IPB	Test Interprocessor Bus.
TEST LCD	Test LCDs.
TEST LED	Test LEDs

5 Clear the display and minor alarms on both Cores. At the prompt enter:

CDSP	Clear the displays on the Cores.
CMAJ	Clear all major alarms.
CMIN ALL	Clear all minor alarms.
****	Exit the program.

6 If desired, switch back to Core/Net 0. At the prompt enter:

LD 135	
SCPU	Switch to the inactive CPU, Core/Net 0

End of Procedure

Perform a data dump

Procedure 24
Perform a data dump

1 At the prompt, enter

LD 43	Load the program

2 Insert a floppy disk into the cPCI MMDU to capture the backup.

3 When “EDD000” appears on the terminal, enter

EDD	Begin the data dump

4 When “DATABASE BACKUP COMPLETE” appears on the terminal, enter

CAUTION

Loss of Data

If the data dump is not successful, do not continue; contact your technical support group. Correct any data dump problems before you continue.

**** Exit the program

The software backout procedure is complete.

End of Procedure

i2050 Software Phone

Contents

The following are the topics in this section:

References 158

i2050 Software Phone description 158

System components 159

- i2050 Software Telephone components list 159
- Internet Telephony Gateway Line card 159
- USB Headset Kit 159
- i2050 Software Phone application 160
- i2050 Software Phone Graphical User Interface 162
- Graphical User Interface Components 162
- i2050 Software Phone dedicated keys 175
- Key number assignments 177
- Language support 178

Operating parameters 179

Feature interactions 180

Feature packaging 180

Feature implementation 180

Feature operation 181

- i2050 Software Phone options menu 181
- Installation 191
- Running the application for the first time 202

References

- *Internet Telephony Gateway Line Card: Description, Installation, and Operation* (553-3001-204)
- *Internet Terminals: Description* (553-3001-217)

i2050 Software Phone description

The i2050 Software Phone is a Windows-based application that connects directly to the LAN through an Ethernet connection to bring voice and data to the desktop environment. The i2050 Software Phone provides most of the attributes and features of the i2004 Internet Telephone.

The i2050 Software Phone operates on PCs running Windows 98, Windows 98 SE, or Windows 2000 Professional.

The i2050 Software Phone supports the following attributes:

- traditional telephony features such as Call Origination, Call Termination, Conference, Transfer, Hold, and Message Waiting Indication
- dedicated Hold, Release, Answer, Volume, Mute, Navigation and Message Waiting Indication keys
- macro functions for programming lengthy dialing patterns
- powerful directory capabilities: locally stored on the PC or linked to external directories such as LDAP, Microsoft Outlook, and ACT! contact management software
- Network access and Dynamic Host Configuration Protocol (DHCP) configurable services (automatic configuration of call server location using DHCP)
- Nortel Networks Universal Serial Bus (USB) Headset Kit for the speech path
- user-selectable ringer that allows the PC speakers or the headset to ring for incoming calls
- provides "one-click" direct dialing from various windows and applications

- reduced number of wires to the desktop by eliminating the need for telephony wires
- online help with full index search capabilities

System components

The i2050 Software Phone requires the installation of an Internet Telephony Gateway (ITG) Line card installed on your system. The i2050 Software Phone is composed of an external Universal Serial Bus headset adapter (USB Headset Kit) and a software application installed on the PC of the user.

i2050 Software Telephone components list

Table 11 lists the i2050 Software Phone package components.

Table 11
i2050 Software Phone package components

Component	Code
i2050 Software Phone application software CD	NTD83AA
USB Headset Kit	NTEX14AA

Internet Telephony Gateway Line card

The Internet Telephony Gateway (ITG) Line 2.2 application now supports the i2050 Software Phone by providing a communication gateway between the IP data network and the Meridian 1 or Succession CSE 1000.

For more information on the ITG Line 2.2 application, refer to *Internet Telephony Gateway Line Card: Description, Installation, and Operation* (553-3001-204).

USB Headset Kit

The USB Headset Kit (NTEX14) ensures a consistent voice quality and loss plan for the i2050 Software Phone.

The USB Headset Kit provides a controlled high-quality audio environment, including:

- absolute and predictable loss and level plan implementation which is necessary to meet TIA-810, FCC part 68 and its international equivalents, as well as the ADA requirements for the hearing impaired
- compliance with version 1.1 of the USB Device Specification and Windows Plug & Play specifications
- simple installation using standard Windows drivers (requires no additional software or drivers)
- support on Windows 98, Windows 98SE, and Windows 2000 Professional
- in-use lamp connector with in-use control provided by polarity insensitive isolated contact closure

The USB Headset Kit auto-configures in the supported Windows operating system. No specific software is supplied with it or is required.

i2050 Software Phone application

The i2050 Software Phone is a Voice over IP (VoIP) application that allows users to communicate over a LAN and WAN from their PCs. It combines the rich set of classic telephony services of the Meridian 1 or Succession Communication Server for Enterprise 1000 Server along with PC resident directory capabilities.

The application is composed of the following components:

- a Configuration Utility - used to configure the software phone
- the i2050 Software Phone - the actual software phone user interface
- Nortel Networks i2050 QoS Service [Windows 2000 Professional]

The i2050 Software Phone has the following functionality:

- Support for 802.1 Q, and DiffServ (operating system dependant)
- Automatic configuration of call server location using Dynamic Host Configuration Protocol (DHCP)

- Features and services are provided by the network (such as call features, calling line identification, and voice mail)
- Intuitive and flexible interface including:
  - slide-out trays to provide access to frequently used features and services
  - retracted trays to provide a smaller interface with full operational capabilities for a single line
  - viewable line status
  - 10-item lists for quick dial and access from both the main and system tray interface
  - user-customizable interface and directories
  - multilingual capabilities (English, French, or other local language)
  - programmable macro functions for lengthy dialing patterns
  - hotkeys map the computer keyboard to application buttons
- Windows system tray operation, allowing the user to receive and place calls without interrupting other work
- Directory application which provides "one-click" direct dialing, access to a variety of directory types, and quick dial lists
- Online help
- User-selectable ringing device to alert the user to incoming calls through the speakers when the headset is not being worn
- Supports G.711, G.729A and G.729AB codecs for operation at a variety of network connection speeds

i2050 Software Phone Graphical User Interface

The i2050 Software Phone appears on the desktop as follows:

- The Primary User Interface is shown in Figure 15. This default presentation is with the operational trays retracted. In this mode the user can operate most features available from the i2050 Software Phone. Calls can be answered or made by pressing the green Answer button. In this mode the call server selects the line to answer or engage. The user can also hang-up, hold, retrieve from hold, mute, adjust volume and access network services such as voice mail. Within the Primary User Interface the computer keyboard provides hotkeys (in parentheses) for:
  - — answer (Enter)
  - — release (F12)
  - — hold (F5)
  - — softkeys/interactive keys (F1-F4)
  - — alphabetic keys map to numbers as per dial-pad mapping shown in Figure 17
  - — arrow keys map to navigation keys

Graphical User Interface Components

Applications Menu

Clicking on the Applications menu icon (top left hand corner) gives access to the Configuration Utility which is used to configure the i2050 Software Phone.

Message Lamp

The Message Lamp turns ON to indicate that a message has been left for the user. This lamp flashes when there is an incoming call.

Exit

Closes the Call Control window, but does not disconnect your computer from the server so you can still receive telephone calls. The i2050 Software Phone application remains running in the background.

Soft Keys

Four additional soft-labeled keys on the i2050 Software Phone set support a specific subset of the Succession CSE 1000 key features.

Programmable DN/Feature Keys

Six DN /feature keys on the i2050 support up to 12 DNs or features (by using the Shift key feature). These are only displayed on the Combo and Lines Tray displays.

Information Display Area

The information display area is an LED which can contain four lines of text, up to a maximum of 24 characters per line. The display area is consists of two areas:

- Info Line
- Info Window

Info Line

The Info Line is the first (top) line of display text. The left 10-character area shows **Meridian** as the call server type.The right part of the Info Line shows the current time and date.

Info window

The Info Window display is a 3x24 LED display area that shows prompts and information about calls. During a call the information area is used to display dialed digits, calling line ID, called party name, application-specific information, and various messages such as "Release and Try Again".

When the information exceeds 3x24 characters, a scroll icon indicator is activated to indicate to the user to use the scroll keys to view the second line of the display.

Softkey Label Display

The i2050 Software Phone display has a character line that shows labels for the four soft keys. Each label is six characters plus an icon. If the icon is off, the label contains seven characters.

Navigation Keys

If the scroll icon is shown on the display, then the UP and DOWN navigation keys are operational for scrolling the text line of the display. Otherwise the UP, DOWN, RIGHT, LEFT navigation keys are used for other various functions depending on the active application.

Answer Key

To answer a call or make a call, the ANSWER key is pressed. Calls can also be answered or made by pressing a DN key in the Lines or Combo trays.

Keypad Dialing Keys

The numeric keypad mimics a regular phone's dialpad. It appears in the Number Pad Tray and Combo Tray displays.

Release Key

To terminate an active call, press the RELEASE key. Use the RELEASE key for disconnecting the headset calls. The RELEASE key is only applicable to active calls.

Hold Key

The user can put an active call on hold by pressing the HOLD key. The feature key label for the held line displays a flashing icon to indicate the call hold status. The user can return to the call by pressing the DN key that corresponds to the feature key for the line on hold.

Mute Key and Indicator

During a call, the user can press the MUTE key to mute the headset's microphone (transmit path). When the transmit audio is muted, the mute indicator flashes. To turn off muting, the user must press the MUTE key a second time.

Network Directory Key

The DIRECTORY key is a fixed feature key that provides access to the directory options.

Message or Inbox

The MESSAGE key is a fixed feature key that is pressed to access the user's voice messages.

Shift Key

The SHIFT key is used to shift between two feature key pages.

Services Key

The SERVICES key is used to connect to applications (services) located on a server. In this release, the SERVICES key is used to gain access to the set option menu items, such as language selection or date format.

Expand Key

No operation is associated with this key in this release.

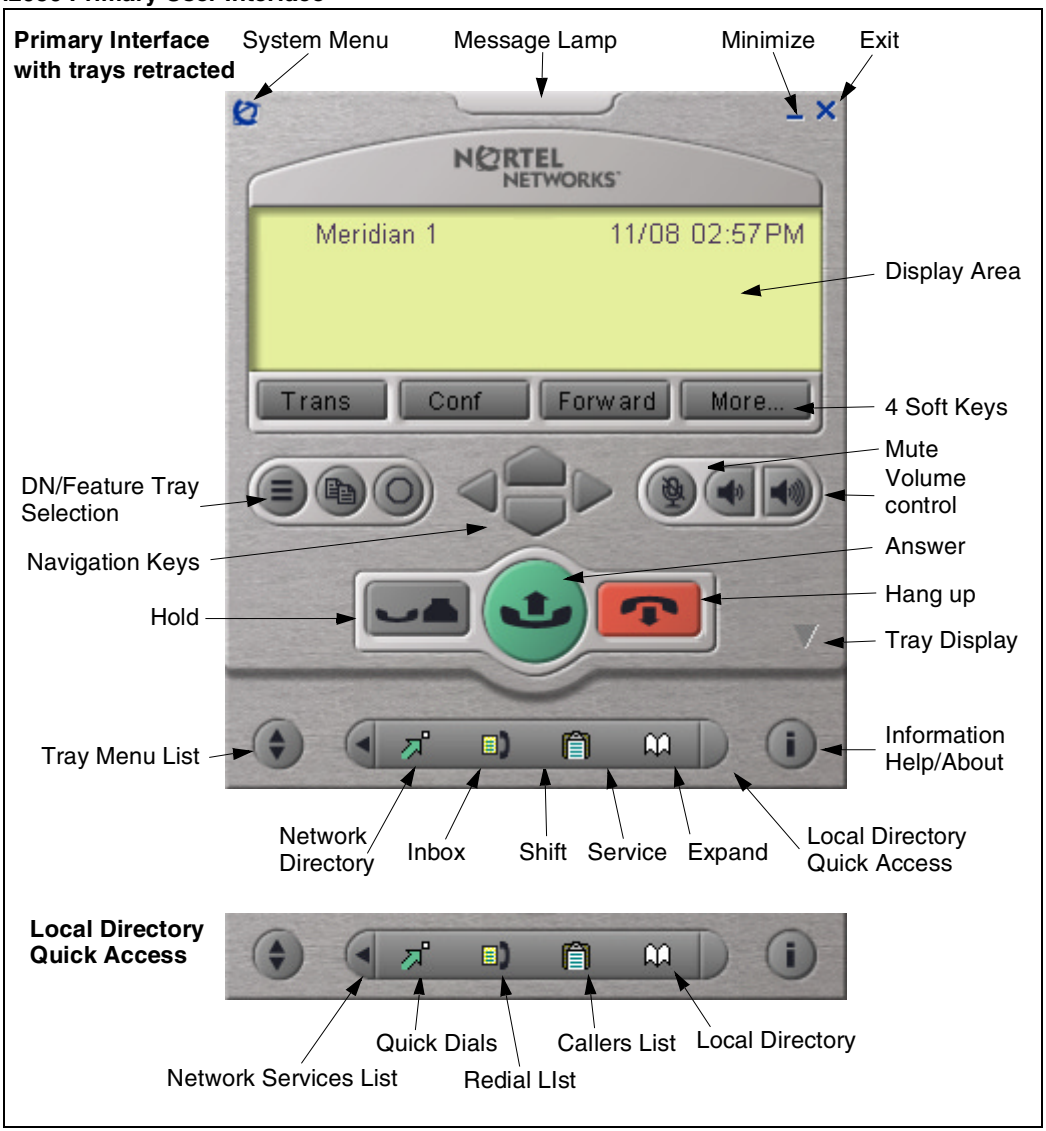
Quit

This key is only used to quit from the option menu.

Copy

— This key is defined for applications and features and not used in this release.

Figure 15
i2050 Primary User Interface



- The DN/Feature Key Tray shown in Figure 16 displays up to six DN or feature keys provisioned for the set by the call server. The status of each

key is illustrated by text or a graphic icon, such as idle, ringing, or connected. The keys are labeled by the Terminal Proxy Server (TPS).

Figure 16
i2050 DN/Feature Key Tray

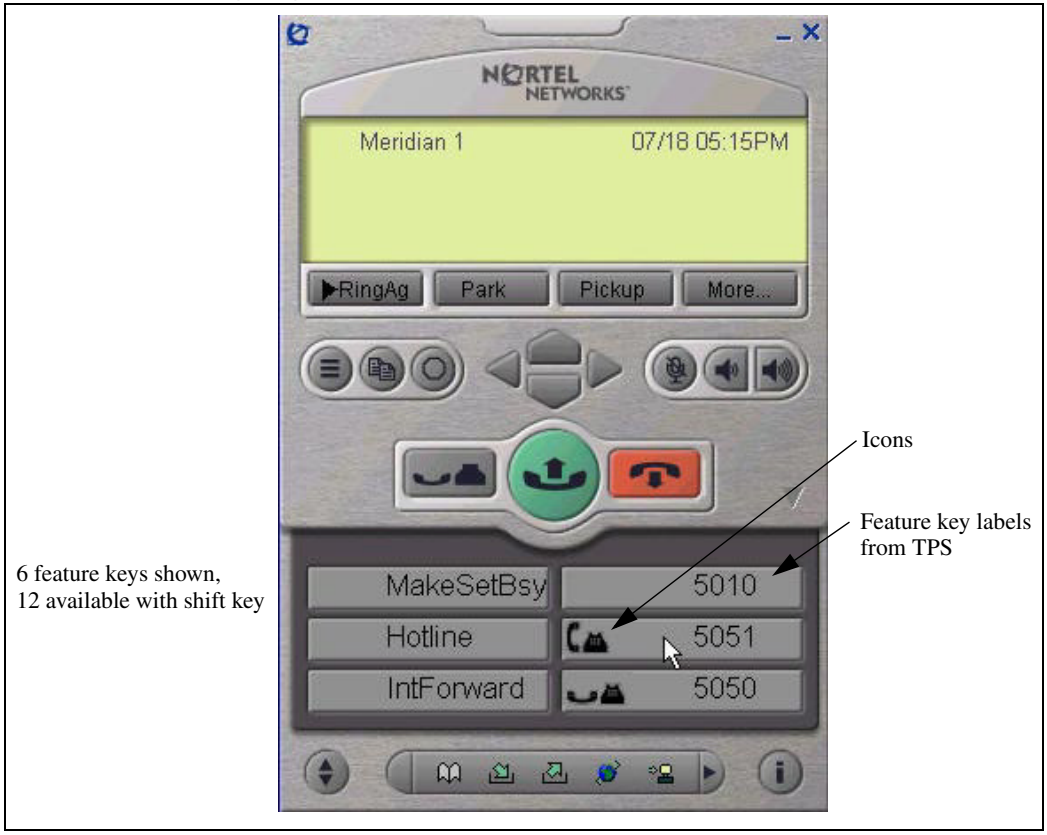
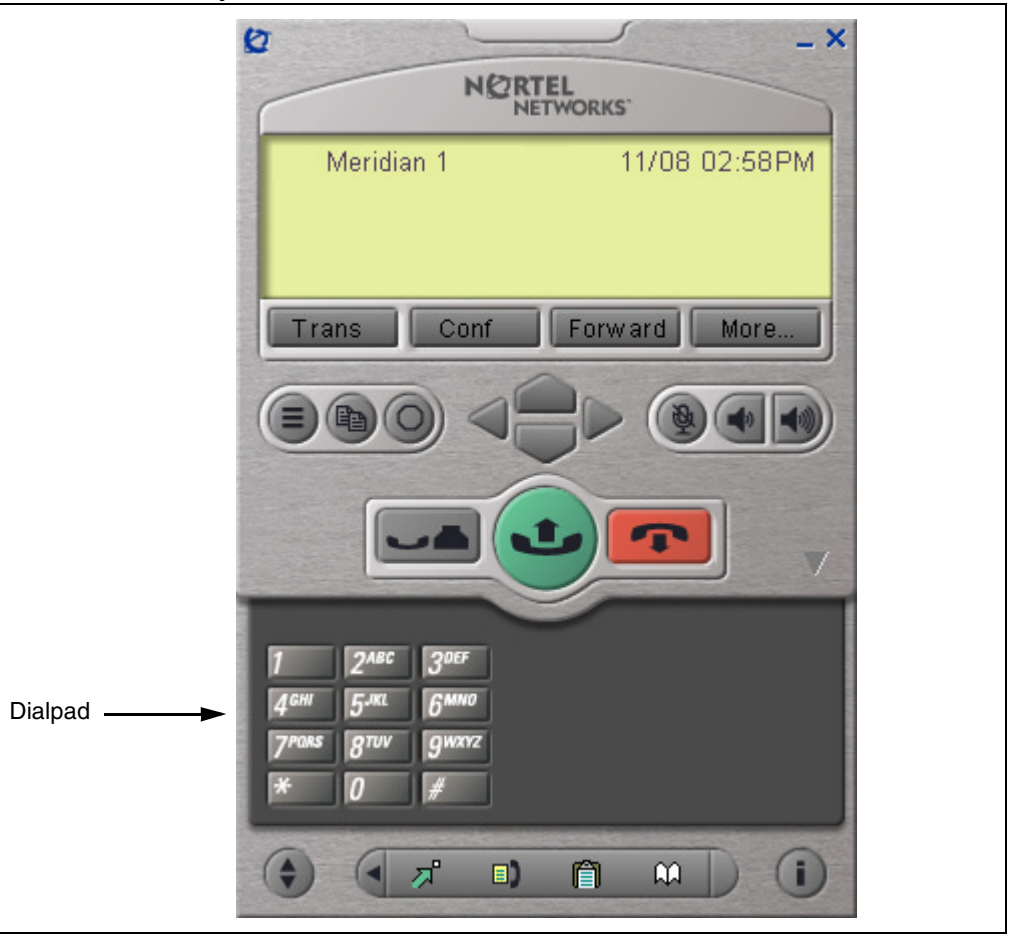
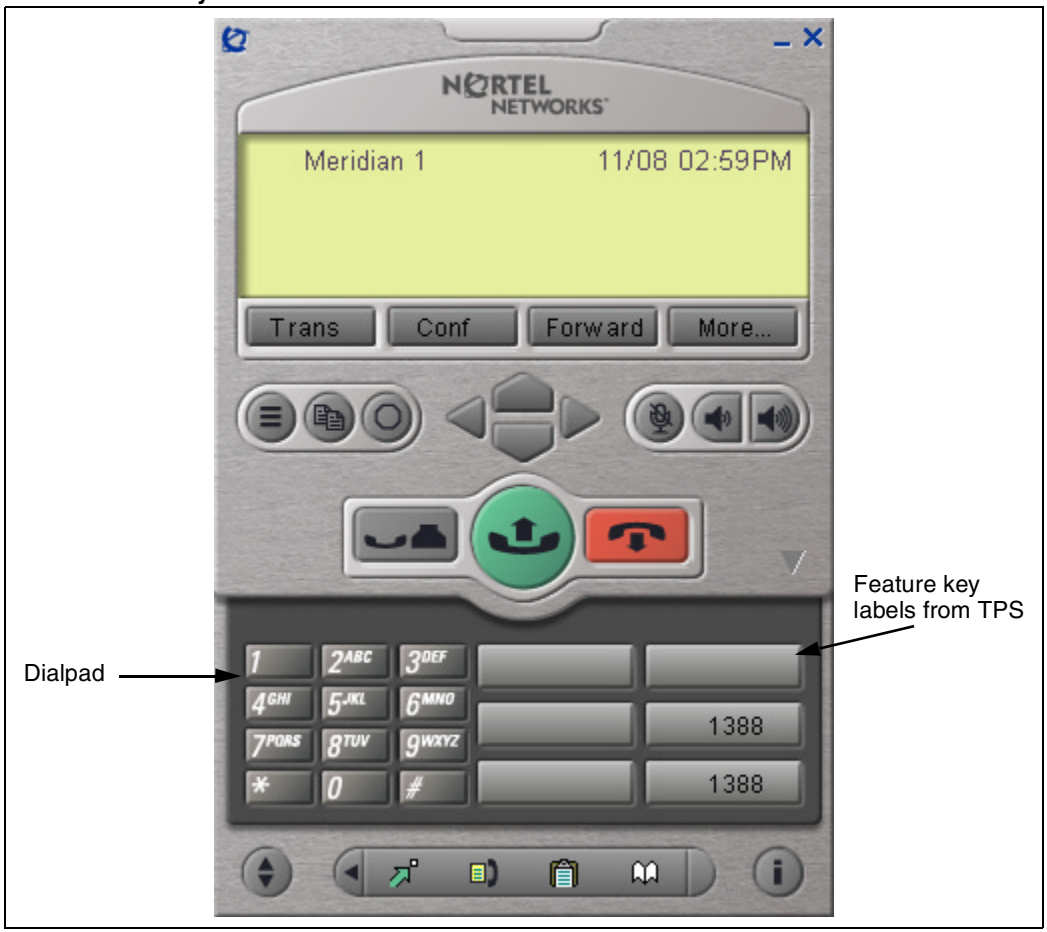


Figure 17
i2050 Number Pad Tray



- The Number Pad Tray shown in Figure 17 provides a graphic keypad to use with a mouse for dialing numbers. In all tray selections numbers can also be dialed by using the computer keyboard.

Figure 18
i2050 Combo Tray



- The Combo Tray shown in Figure 18 combines the DN/Feature Key Tray and the Number Pad tray. The feature keys will indicate the following states:
  - — Idle: as shown in Figure 18 on page 169
  - — Ringing: long flashing red bar on the upper left corner of the key, as shown in Figure 19 on page 170

— Hold: medium winking yellow bar as shown in Figure 20 on page 171

— Off-hook (Dialing/Answer): short solid green bar as shown in Figure 21 on page 172

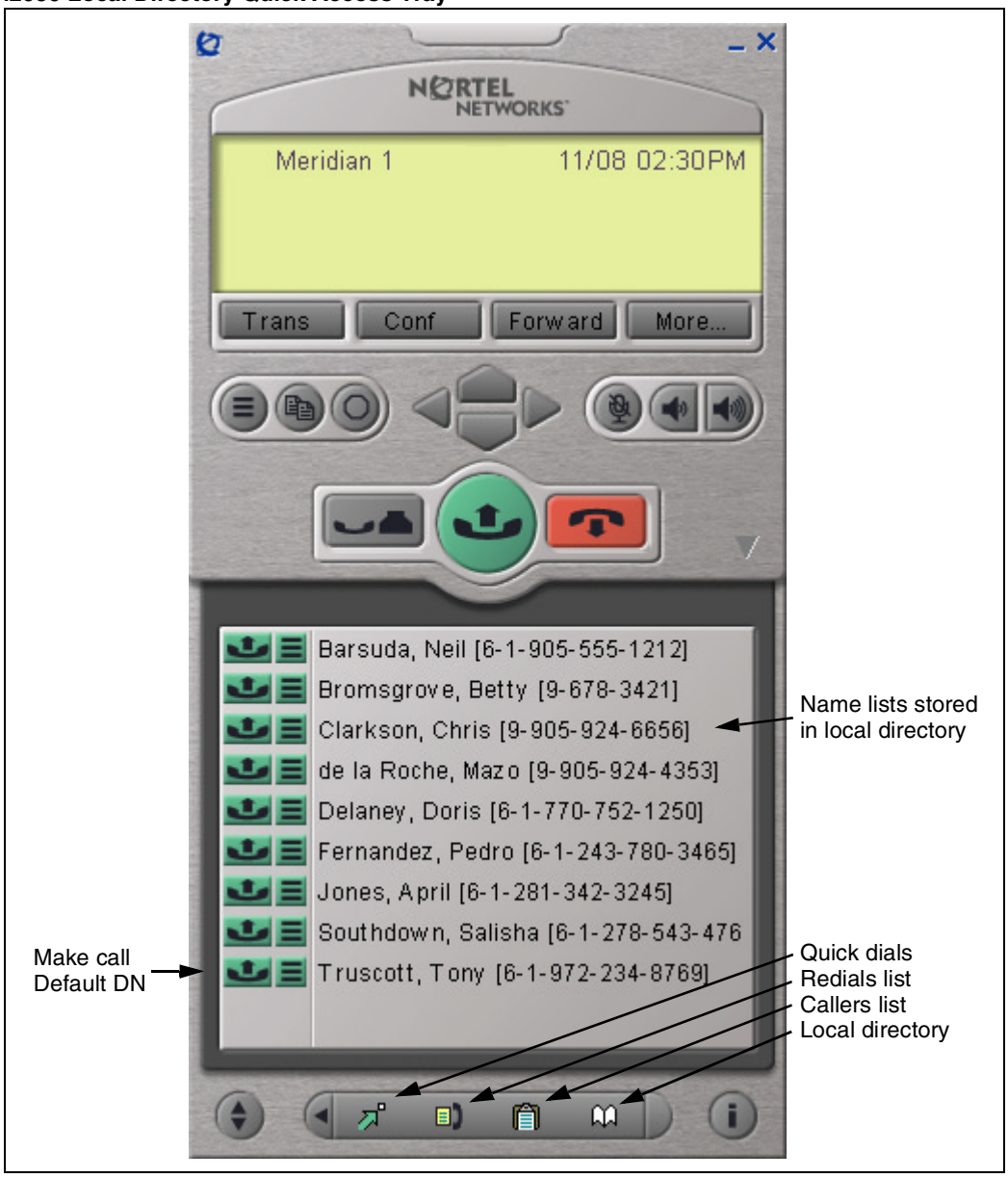
Figure 19
Feature Key indicating ringing with flashing red bar

Figure 20
Feature Key indicating hold with flashing yellow bar

Figure 21
Feature Key indicating Off-hook (Dialing/Answer): with solid green bar

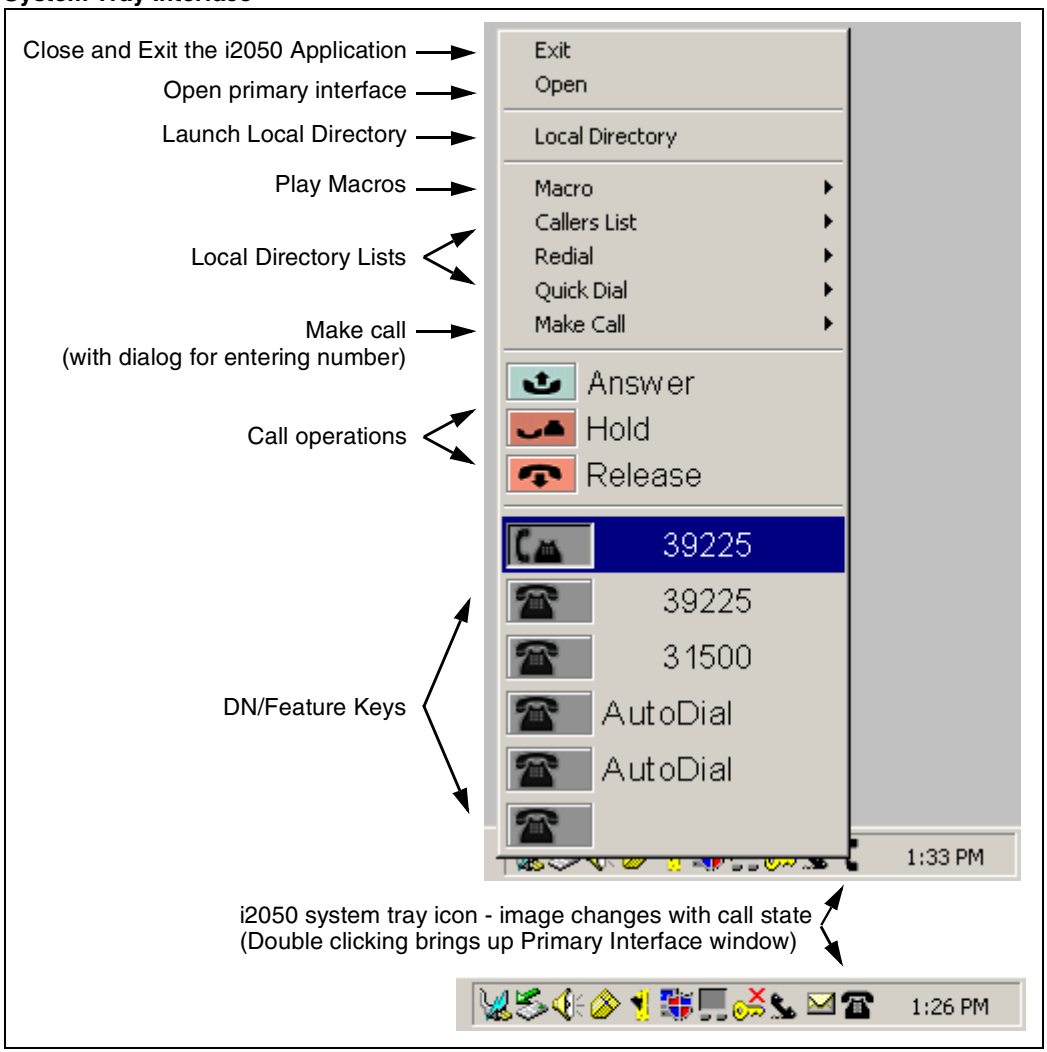
- Local Directory Quick Access Trays (Figure 22 on page 173). The Local Directory maintains lists of quick dials, redials and callers. Ten items in the lists can be viewed and dialed directly from the Primary User Interface using Quick Access Trays.

Figure 22
i2050 Local Directory Quick Access Tray



There is also a System Tray Interface shown in Figure 23 which provides fast access to most of the application's functionality. The user can answer a call from the system tray without launching the Primary User Interface. The System Tray Interface displays the current six DN/Feature keys. These keys are visible on the application's DN/Feature key tray or Combo tray if the application is on the desktop. The Make Call menu item also displays the current six DN/Feature keys.

Figure 23
System Tray Interface



i2050 Software Phone dedicated keys

Table 12 describes the specific telephone assignment functions you can program for Keys 16-26 on the i2050 Software Phones using Overlay 11.

Note: If you attempt to configure anything other than the permitted response, the system generates an error code.

Table 12
i2050 Software Phone dedicated keys

Prompt	Response	Description
Key 16	MWK	Message Waiting key
	NUL	Removes function or feature from key
Key 17	TRN	Call Transfer key
	NUL	Removes function or feature from key
Key 18	A03	3-party conference key
	A06	6-party conference key
	NUL	Removes function or feature from key
Key 19	CFW	Call Forward key
	NUL	Removes function or feature from key
Key 20	RGA	Ring Again key
	NUL	Removes function or feature from key
Key 21	PRK	Call Park key
	NUL	Removes function or feature from key
Key 22	RNP	Ringing Number pickup key
	NUL	Removes function or feature from key
Key 23	SCU	Speed Call User
	SSU	System Speed Call User
	SCC	Speed Call Controller
	SSC	System Speed Call Controller
	NUL	Removes function or feature from key
Key 24	PRS	Privacy Release key
	NUL	Removes function or feature from key

Prompt	Response	Description
Key 25	CHG	Charge Account key
	NUL	Removes function or feature from key
Key 26	CPN	Calling Party Number key
	NUL	Removes function or feature from key

Key number assignments

The i2050 Software Phone has six keys which are used to present 12 feature keys, with six on each feature key page. The keys are numbered 0 - 11. The Shift key is used to toggle between two feature pages, 0 - 5 and 6 - 11.

The Message key is numbered 16. If Message Waiting is not configured then key 16 must be NUL.

Key numbers 17-31 are the four soft label keys immediately below the display area. The 14 features they support are A03, A06, CFW, CHG, CPN, PRK, PRS, RGA, RPN, SCU, SCC, SSU, SSC, and TRN.

Language support

The i2050 Software Phone is affected by the following three language controls:

- Operating system language selection
- i2050 Software Phone language selection - sets language displayed in the help screens and in the menus. The language selection of the i2050 Software Phone is done from the Application menu or during installation.
- TPS language selection - sets the language in the display area. The language in the display areas is selected from the Services > Options menu. In normal operation, the language chosen from the i2050 Software Phone's language setup matches the language chosen from the Services > Options menu. Otherwise the softkey labels and feature prompts will appear in a different language than the help text and menu items on the i2050 Software Phone application. The user must ensure that the appropriate language is chosen. The languages supported are summarized in Table 13.

Table 13
Language support

TPS Supports (display)	i2050 Software Phone Supports
English	English - US
French	French - Euro
Spanish	Spanish - Euro
Portuguese	Portuguese
Danish	Danish
Dutch	Dutch
German	German
Italian	Italian
Norwegian	Norwegian
Swedish	Swedish
Finish	English - UK
Polish	French - Canadian
Czech	Spanish - Latin American
Hungarian	
Japanese	

Operating parameters

- A Universal Serial Bus (USB) port is required on the PC.
- For i2050 Software Phones, the software version upgrade must be done manually by the technician at the PC. The ITG Line card does not download any software to the i2050 Software Phone. The isetShow command on the ITG Line card displays the current version of any registered i2050 Software Phones.
- The i2050 Software Phone can have a maximum of 22 features plus DNs configured. These are the 10 predefined soft keys, the predefined Message key, and the 12 programmable feature / DN keys. If the soft keys and Message keys are not used for those features they cannot be used for any other features.
- The i2050 Software Phone does not have an ACD Supervisor headset jack. Agent walkaway is not supported.
- An i2050 Software Phone does not register against a TN configured for any other type of Internet Telephone.
- Soundcard audio is only supported for incoming call notification. Nortel Networks only supports the USB Headset Kit for the speechpath.
- The i2050 Software Phone application does not currently support Japanese, Latin American Portuguese, or PRC (simplified Chinese) languages for the help screens and skin text. See “Language support” on page 178 for an explanation of which parts of the displayed text this affects.
- The i2050 Software Phone is only supported by Nortel Networks when used on a PC running Windows 98, Windows 98SE, and Windows 2000 Professional. The minimum recommended system hardware is:
  - Pentium Pro 200 MHz with 64 Mbytes RAM (Windows 98 and Windows 98 SE)
  - Pentium Pro 200 MHz with 128 Mbytes RAM (Windows 2000 Professional)
- Five menu options available on the i2004 Internet Telephone are not required on the i2050 Software Phone. The options are not required on the i2050 due to the lack of an LED and availability of existing PC control options. The five options excluded from the i2050 are:

- volume adjustment
- contrast adjustment
- display diagnostics
- key click
- On-hook default path

- The i2050 Software Phone does not support user control over the key click.

Feature interactions

There are no feature interactions associated with this feature.

Feature packaging

There are no new packages associated with this feature.

Feature implementation

Note: An Internet Telephony Gateway (ITG) Line card must be installed in the system in order to configure the i2050.

The following steps are necessary for installing an i2050 Software Phone:

- Install the ITG cards. ITG Line 2.2 or later must be running on the ITG card.
- Configure a Virtual loop on the call server, using overlay 97
- Configure the i2050 in OVL 11 with TYPE I2050
- Install the USB Headset Kit
- Install the i2050 Software Phone
- Run the i2050 Configuration Utility

LD 11 – Configure the i2050 Software Phone.

Prompt	Response	Description
REQ	NEW CHG	Add new data. Change existing data.
TYPE	i2050	Type of data block
TN	c u	Terminal number
DES	x...x	ODAS telephone designator
CUST	xx	Customer number
...		
ZONE	0-255	Zone number
FDN	x...x	Flexible CFNA DN
...		
CLS	aaa	Class of service HFA - Digital Telephone Handsfree Allowed is default for i2050 to enable the USB interface

Feature operation

i2050 Software Phone options menu

The Options functions are used to control user-specific operating parameters of the i2050 Software Phone. The i2050 Software Phone's Services Options main menu consists of the following persistent items:

- Language
- Ring Type
- Time and Date Format

- Call Timer
- Set Information

Note: These items remain the same through installs and uninstalls.

To change any of the options the user must:

- Click the Services key. The Telephone Options menu appears in the information area. The four soft keys are labeled with Select … … Cancel
- Use the Up/Down navigation keys to scroll up or down the menu. When the required option is highlighted, use the Select softkey to select it.
- When an option is selected, the user can change its setting by pressing the instructed Software Phone key. To exit from the selected option and go back to the Options main menu, the user presses the Cancel softkey.
- If a call is presented while the user is manipulating an option, the set rings and the DN key flashes. However the screen display is not updated with Caller ID. The programming text is not disturbed.
- The user can originate a call using Autodial or Last Number Redial while manipulating the options, however the display is not updated with dialed digits or the Caller ID and the dialpad is intercepted by the Options function.
- While active in the Options function, the user can press the Quit key at any time to exit the application. Any settings that are not saved at that time are lost.

Language

To select the display language of the i2050 Software Phone, the user highlights the Language option from the Telephone Options menu and presses the Select softkey. The user is then presented with a sub-list of supported languages. The user can select the language desired and press the Select softkey to change it. When finished, the user can press the Exit softkey to return to the Telephone Options main menu. See “Language support” on page 178.for more information.

Time and date format

To change the time and date display format of the i2050 Software Phone, the user highlights the Time and Date Format option from the Options main menu and presses the Select softkey. A list of different format types is displayed. The user can highlight the format and press the Select softkey to change it. When finished, the user can press the Exit softkey to return to the Options main menu and the changed format is saved. The displayed time and date is sent from the TPS to the i2050 Software Phone, so it can vary from the time set on the PC.

Time of Day

Because of the geographic independence that an IP connection provides, it is possible that an i2050 is not in the same time zone as its host call server. The current time and date mechanism within the call server assumes that all of its peripheral devices are in the same time zone. The time displayed on the i2050 is always the time known by the internal clock of the system.

Call timer enable

The Call Timer option allows the user to control the automatic timing of an established call locally at the i2050 Software Phone. The call timer can be toggled between Enable and Disable mode. To enable or disable the call timer, the user highlights the Call Timer option from the Option main menu and presses the Select softkey. The current setting of the Call Timer is displayed and the user can press the Change softkey to toggle the mode. When finished, the user can press the Cancel softkey to return to the Options List menu and the selected mode is saved.

Ring type

To change the ringer tone of a set, the user highlights the Ring Type option from the Options main menu and presses the Select softkey. The user is presented with a sub-list of various ring types. In this sub-list, the user can highlight the ring type desired and press the Select softkey to change it, or press the Play softkey to test the ring type. When finished, the user can press the Cancel softkey to return to the main menu and the changed ring type is saved.

Set information

This option item is used to display set-specific informations, including: set IP address, hardware ID of i2050, current firmware version, TN, Node ID, Node IP address and the specific ITG Line card the i2050 is registered on.

Mute Key Operation

Press the Mute key to toggle between muted and unmuted. When in the muted state the Mute key flashes. When in the muted state, all audio input from the headset is muted. Pressing the Mute key turns off the audio path for the transmit direction, so the far end will not receive audio packets from a muted i2050 Software Phone.

If no audio stream is opened, pressing the Mute key will not change the LED status beside the Mute key. If a muted call is hung up, or if the conference or transfer button is pushed, the mute feature and LED automatically turns off.

Answer Button Operation

Pressing the Answer button causes the i2050 Software Phone to go off hook so that a call can be initiated or answered. Pressing this button connects the audio path to the USB headset. The headset can only be controlled by the Answer button or Feature keys and the local volume control. The headset cannot be controlled by any Call Server software features.

Volume Controls – Headset, Ringer

The volume can be controlled independently for the ringer and headset and the setting stored locally on the PC. When the application is on hook and is idle or ringing, operating the volume Up/Down buttons causes the volume of the ringer to be modified. Operating the volume Up/Down buttons when the set is in the headset mode causes the volume levels to change respectively. Whenever the volume level is being changed there is a small bar graph with a label displayed to indicate the volume level change.

Call Features

This section describes the call features that are available on the IP phones and how they are activated. The i2050 Software Phone supports any combination of features and DN types up to a maximum of 12 assigned to the programmable keys plus the 10 predefined features assigned to the soft keys. See “i2050 Default Softkey Features” on page 185.

The key labels are downloaded from the Call Server; therefore, changes made in the call server configuration are reflected immediately in the labelling of the key. DN keys are labeled with the DN number (without the ESN location code).

The message waiting lamp indicates a message. The lamp also indicates alerting. The Message Waiting Key (MWK) is configured on the Message application key and cannot be configured on any other key.

Soft label key features

The four soft-labeled programmable feature keys which appear physically on the i2050 Software Phone may be used to provide up to 10 features. Table 14 shows the default softkey features layout.

Table 14
i2050 Default Softkey Features

Key Number	Default Feature	Comments
Key 17	TRN (transfer)	
Key 18	AO6 (6-party conference)	alternate: AO3 (3-party conference)
Key 19	CFW (call forward)	
Key 20	RGA (ring again)	
Key 21	PRK (call park)	
Key 22	RNP (ringing number pickup)	
Key 23	(reserved for speed dial)	configure speed call: SCU/SCC/SSU/SSC
Key 24	PRS (privacy release)	
Key 25	CHG (charge account)	
Key 26	CPN (calling party number)	
Key 27 -31	reserved	

If a feature requires a feature package which is not present for the Call Server installation, that feature does not appear within the default configuration for the i2050 Software Phone. Also, if one of the key 17-26 features depends on a Class of Service that is not present for the particular set, the feature does not appear in the configuration of the i2050 Software Phone.

Feature AO6 is the default feature for key number 18. The technician can manually re-configure key number 18 as AO3 instead of AO6 through Overlay 11.

Key 23 has no default feature configuration because all the speed dial features require custom data not available during the default configuration process. Key 23 can be manually configured as SCU, SCC, SSU or SSC (all speed dial features).

The technician can remove any of the features provided on keys 17-26 by manually reconfiguring the key number as NUL. This is done using Overlay 11.

Appearance of 10 soft label keys

Under feature-rich conditions, when all required packages and Class of Service are present, all 10 features on keys 17-26 are provided on the i2050 Software Phone. Table 15 shows how the maximum configuration appears on the set as four layers. Layer 1 is visible when the set is idle. The user navigates through the circular stack by using the More.. key.

Table 15
Soft label keys layout

Layer 1:	Trans	Conf	Forward	More...
Layer 2:	Ring Again	Park	Pickup	More...
Layer 3:	SCU	PrivRls	Charge	More...
Layer 4:	CParty			More...

Appearance of fewer than 10 soft label keys.

Because of feature restriction, class of feature restriction, or because a default feature key has been removed (NUL'd), the typical Internet Telephone could have less than 10 soft label feature keys. Here is one example:

Table 16
Typical soft label keys configuration

Layer 1:	Trans	Conf	Forward	More...
Layer 2:	SCU	PrivRls		More...

When less than four soft label feature keys are configured, they may appear as a single layer, with no More.. key.

Table 17
Four or less soft label key features

Layer 1:	Trans	Conf	Forward	SCU

Unused keys

Some keys are not used in the implementation of the i2050 Software Phone. Activating an unused key does not cause any response on the telephone, nor are there any messages sent to the Call Server.

Soft labeling

When a DN key or Autodial is configured on an i2050 Software Phone, the default label shown on the set for that line appearance is the DN number or Autodial number.

When a call processing feature is configured on an i2050 Software Phone, the default label shown on the set is a predetermined string. Soft labels for programmable feature keys are shown at the bottom of the display and have a maximum length of seven characters. Soft labels for programmable DN or feature keys at the top of the set have a maximum length of 10 characters.

In this release, the i2050 Software Phone does not provide user-specified labeling of the soft keys since the text is sent from the TPS.

Registration

When you add an i2050 Software Phone to the network, the i2050 will, depending on the Configuration Toll settings, attempt to connect to a pre-defined IP address or may request an IP address from a DHCP server. The i2050 Software Phone then contacts the Connect Server which instructs the i2050 Software Phone to display a message on its display screen requesting the customer's node number and TN.

After the customer enters this information, the i2050 Software Phone contacts the Node Master which selects a TPS with sufficient capacity to register the i2050 Software Phone. The i2050 Software Phone contacts the chosen TPS, and if the i2050 Software Phone is valid, registers it with the Meridian 1 or Succession CSE 1000. The registration information is then saved to the i2050 Software Phone.

Loss Plan

The USB Headset Kit provides the i2050 with a fixed loss plan compliant with the TIA-810 specification. If other headsets or audio devices are used, the loss plan is unknown and undefined. Nortel only supports resolution of audio problems for the USB Headset Kit.

Echo Cancellation

Echo can be generated electrically wherever there is an impedance mismatch, or generated acoustically by feedback from a speaker or ear piece to a microphone. Any echo that is ultimately returned to the IP phone is more noticeable to the listener because of the additional delay introduced by the IP connection.

The ITG Line card has echo cancellers included as part of its function that cancel echo generated on the TDM side of the gateway. Whenever there is audio going through the ITG Line card the echo cancellers are enabled.

The i2050 Software Phone has no echo canceller, so a slight echo from acoustic coupling on the headset could occur in some call situations.

Set Concentration

The ITG Line card supports the same concentration of i2050 Software Phones as i2004 Internet Telephones; a mixture of these can exist on an ITG Line card up to the current maximum of a total of 96 devices registered. The i2050 uses the same UNIStim messaging for registration, call setup and teardown, and therefore imposes the same real-time impact on the ITG Line card.

Clock Synchronization

Buffer underruns and overruns can occur since there is no sample clock at the receiving end of an IP audio stream synchronized to the transmitting clock. The buffer overruns and underruns are corrected by two mechanisms, both of which apply to the IP phones and the DSPs on the ITG Line card.

Jitter Buffer

The jitter buffer of the i2050 Software Phone is configurable. It can either be set by using the default value sent from the TPS (that is, the value configured in OTM) or it can be set directly in the Configuration Utility. It is recommended that the default value be used.

The jitter buffer has a desired size and a maximum allowable size. If the jitter exceeds its maximum allowable size, sufficient frames are discarded to reduce the contents of the jitter buffer to the desired setting. If the jitter buffer underruns, frames are held in the jitter buffer until it fills to the desired level. Both under run and over run result in a discontinuity in the audio.

For codecs which support silence suppression, the jitter buffer is resynchronized at the beginning of each talk spurt.

QoS

A combination of codec selection, jitter buffer and packet time, and the use of the network's DiffServ code point all contribute to the end-to-end QoS.

However, the i2050 is an application within the context of the PC's OS, such that the OS has an effect on how flexible is the support of the i2050 of these items. The DSP functionality (such as codec packetization) implemented in DSP hardware on the i2050 and ITG Line card runs as part of the application code on the PC's CPU. If the CPU is busy with other tasks, voice quality can be negatively affected.

The number of buffers used to buffer audio data between the application and PC audio hardware device driver is adjustable from the Configuration Utility. The fewer buffers used reduces the audio path delay but increases the chances of dropouts and choppy speech depending on the speed and utilization of the PC's CPU.

DiffSERV (DSCP)

The i2050 Software Phone uses DSCP settings assigned by the TPS. The i2050 supports DSCP on Window 98, Windows 98 SE and Windows 2000 Professional.

802.1Q

The i2050 uses 802.1Q settings assigned by the TPS. The i2050 supports 802.1Q on Windows 2000 Professional. This requires the installation of Nortel Networks i2050 QoS Service. Administrators can install this service from the CD-ROM. The DSCP values assigned from TPS 802.1Q operation can be enabled or diabled from the QoS tab in the Configuration Utility.

Codec

The i2050 provides the following codecs:

- G.711 provides the highest quality (if the network facilities can handle the packet flow) since there is no compression
- G.729A is considered the next best; it has 8:1 compression but no voice activity detection
- G.729AB is the same as G.729A but with voice activity detection enabled; while this provides the lowest average network bandwidth utilization, in some call environments the speech quality will suffer due to clipping of the beginning of words.

Frame size

The i2050 supports the range of frame sizes shown below.

- G.711-64 A-law and µlaw: 10-960 – 10 ms increments
- G.729A: 10-960 – 10 ms frames
- G.729AB: 10-960 – 10 ms frames

Installation

The call server side of the configuration process is identical to the steps performed for the i2004 phone:

- Install the ITG Line cards. The ITG Line application must be running on the ITG Line card.
- Configure a Virtual loop on the call server, using Overlay 97.
- Configure the i2050 Software Phone in OVL 11 with TYPE I2050.

The remainder of this section explains the installation and configuration processes performed at the PC.

Install the USB Headset Kit

Installing the USB Headset Kit first allows the i2050 application to show it as an audio device option during the installation of the application. If the USB Headset Kit is installed after the i2050 software application, you can still choose it as the audio device from the Configuration Utility.

Procedure 25
Install the USB Headset Kit

1. Connect the coiled lower cord to the headset cord with the Quick Disconnect connector. Ensure the Quick Disconnect is securely fastened.
2. Connect the headset cord to the RJ9 jack on the adaptor.
3. Connect the USB cable to the headset adaptor and to one of the USB jacks on the back of your PC or USB hub.

End of Procedure

The first time the headset adapter is plugged in, there will be a delay while Windows configures the device and locates appropriate driver software. During the installation you may be prompted to supply the original Windows CD-ROM so that Windows can locate the required drivers.

Install the i2050 Software Phone

Running Installer

Procedure 26
Install the i2050 Software Phone on your PC:

1. Insert the CD-ROM disk into the CD-ROM drive of your PC.

   Note: Installation should proceed automatically. If it does not, then continue with step 2. Otherwise go directly to step 5.

2. Double-click the My Computer icon.
3. Double-click the CD icon.
4. Double-click the Setup icon.
5. Follow the prompts that appear on the screen.
6. Run the i2050 Configuration Utility to assign a server address, select sound devices, and select a server type.

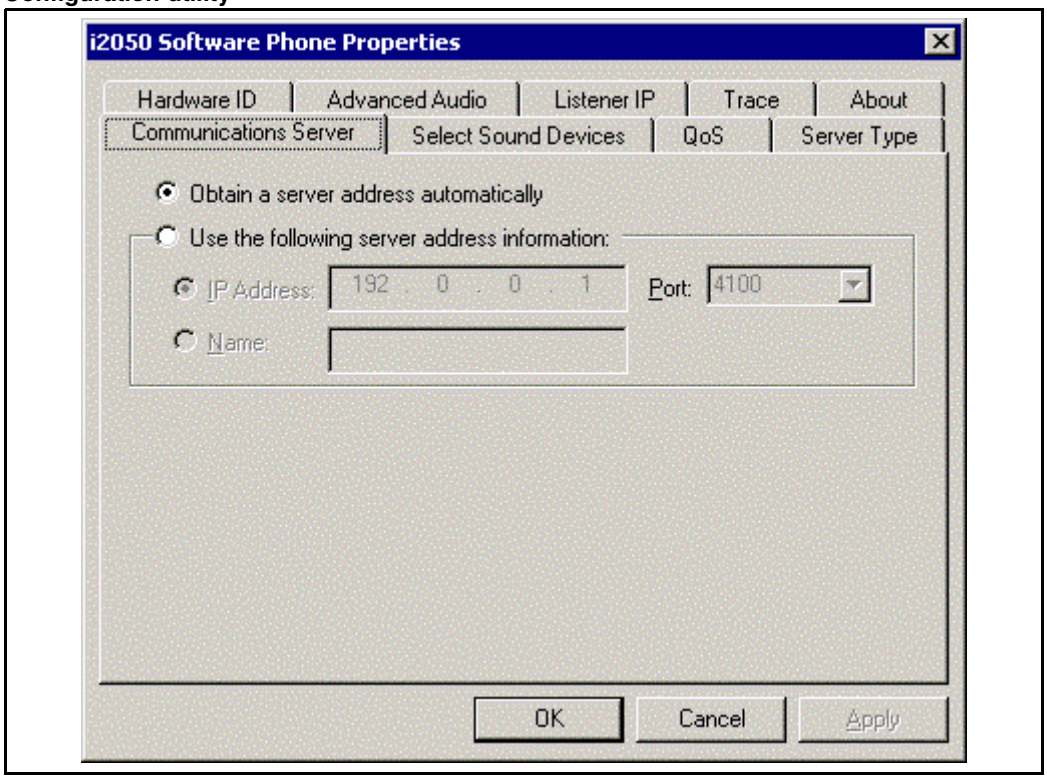
End of Procedure

Installation will place the i2050 Software Phone in the Windows Start menu at *Start>Programs>Nortel Networks>i2050 Software Phone*. The Configuration Utility will be placed in the Windows Control Panel.

Running the Configuration Utility

Figure 24 shows the opening screen of the Configuration Utility. The utility has a series of tabs across the top which give access to various configuration parameters. The following sections cover each tab and any necessary settings.

Figure 24
Configuration utility



Standard Configuration Items

Communications Server

A summary of all of the required parameters and the method of acquisition is given in Table 18. Information on how to set each of the parameters is in the following sections.

Table 18
IP telephone IP parameters (Part 1 of 2)

Parameter	Method of Acquisition
IP Address	Configured for the PC either manually or retrieved using DHCP.
Net Mask	Configured for the PC either manually or retrieved using DHCP.

Table 18
IP telephone IP parameters (Part 2 of 2)

Parameter	Method of Acquisition
Router Address	Configured for the PC either manually or retrieved using DHCP.
Initial Server Address (Primary and Secondary)	Configured in the Communication Server tab of the Configuration Utility.
UserID (Node ID, Node Password and TN)	Manually entered for the first time configuration. Retrieved from storage for subsequent registrations.

The i2050 uses the PC's IP address, net mask, and router address. Typically, a PC queries the DHCP server for these values. When the i2050 is launched and DHCP use is configured, it does a DHCP request on its own. It only looks for custom values like the Server 1 address. The Nortel application-specific strings are entered into the DHCP tables as per the i2050 values in the format defined for the specific DHCP server.

If the DHCP server itself is changed or rebooted, the general values (like the PC's IP address) are only refreshed when the PC is rebooted - the DHCP server is responsible for tracking/learning what's happening to IP address leases. If the DHCP extended parameters (for example, Server 1 address) are modified, the i2050 application must be restarted.

The Node ID and TN must always be manually entered at the i2050's screen during the first-time registration process. If a non-null password was configured for the node, the user must enter the password correctly before going to the TN-entering screen.

Refer to Figure 24. If your site uses DHCP to configure Internet Telephones, select "Obtain a server address automatically". This is the default method of locating the Communications Server. If DHCP is used, no further configuration is required. The application does its own DHCP request to retrieve the ITG Line Node's IP address information.

If you choose to manually configure the Communications Server address, select "Use the following server address information" and enter the ITG Line Node's IP address. In the Port box select Meridian 1. This sets the Port to 4100. Obtain the IP address from the network administrator or telecom manager.

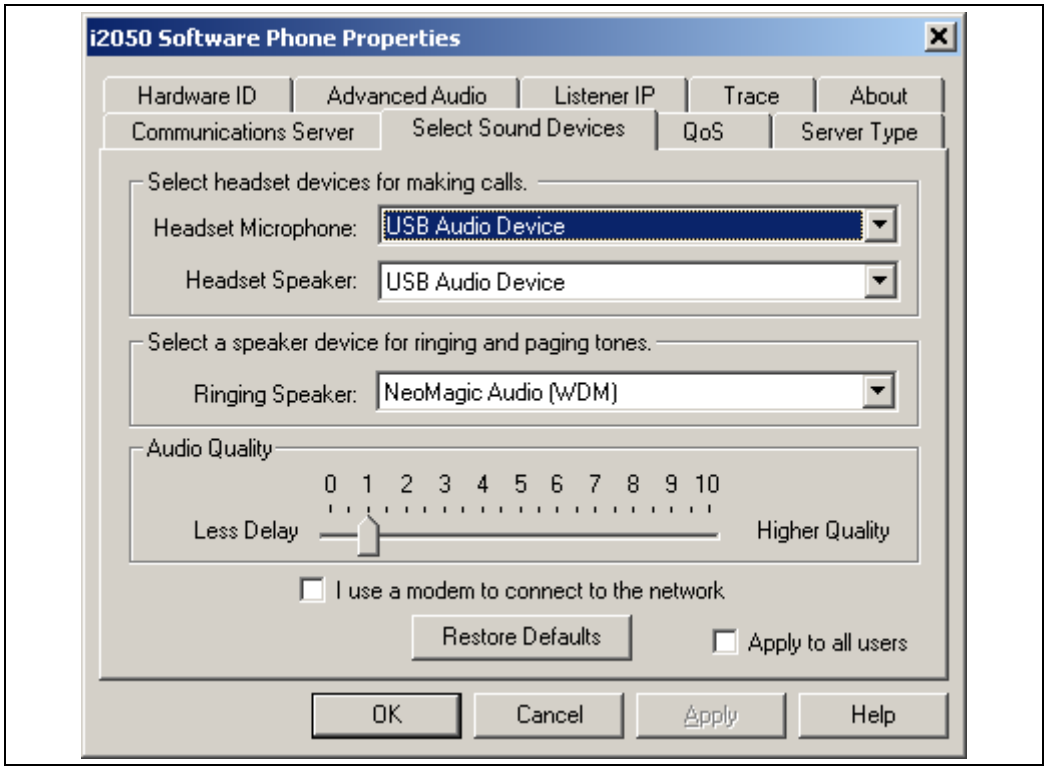
Select Sound Devices

This tab selects the PC's audio device for the microphone, speaker and alerting tones. See Figure 25.

Select headset device for making calls. The drop-down menus list recognized audio devices for the headset's microphone and speaker. Select the USB Audio Device to choose the Nortel Networks USB Headset Kit headset.

Select a speaker device for ringing and paging tones. You can select a different speaker as a ringing device. This allows call-alerting tones to be played over the PC speaker rather than on the headset, so that you can hear the ringing phone when you have taken the headset off.

Figure 25
Select Sound Devices tab



Audio Quality. This slider allows the user to choose the balance between low delay or higher quality audio. The slider adjusts the number of buffers between the PC's audio device and the i2050 application. Less delay is achieved by reducing the number of buffers; however, this increases chances the buffers will run out, resulting in poorer audio quality. The Less Delay setting requires the PC's CPU to give attention to the application more frequently and should only be chosen on newer PCs with fast CPUs. Choosing Higher Quality increases the number of buffers, making buffer under-/overruns less likely, but increasing the end-to-end delay. If choppy or broken speech is heard, try moving the slider to Higher Quality to see if that eliminates the problem.

When a modem is used to connect to the network. This box has no effect because the core CPU controls the codec selection and notifies the i2050 Software Phone which one to use.

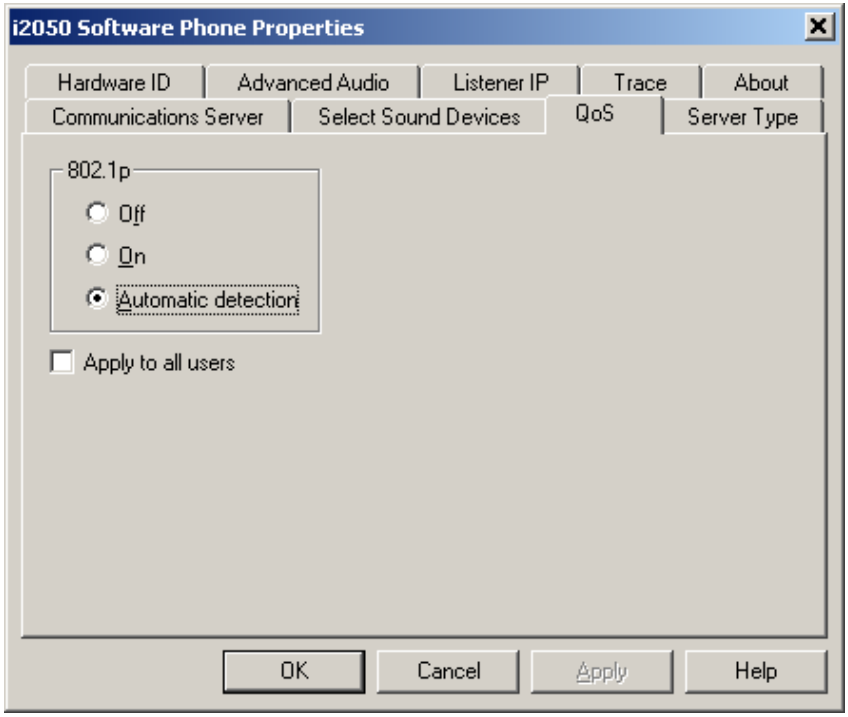
QoS

Refer to Figure 26. Check the Enable box if the i2050 is in a QoS-enabled network. When checked, the i2050 uses the DSCP values configured at the operating system level. If left unchecked, 0 is put in the DSCP field in outgoing packets.

Not all operating systems permit assignment of all QoS settings. The Configuration Utility allows only settings applicable to specific operating systems to be assigned. The only possible assignments in Windows 2000 Professional are 802.1Q and DiffServ.

Note: Administrator privileges are required to set 802.1Q and DiffServ.

Figure 26
QoS tab



Prerequisites for Windows 2000 Professional 802.1Q/DiffServ:

To enable QoS on Windows 2000 Professional the administrator must install QoS Packet Scheduler.

- This can be done in Windows Network Properties by clicking on "Install...".
- Then in the "Select Network Component Type" dialogue, highlight "Service" and click on "Add...".
- Then in "Select Network Service" dialogue, highlight "QoS Packet Scheduler" and click on "OK".

  Note: The Windows 2000 Professional CD-ROM may be required.

QoS registry settings assigned by the Configuration Utility

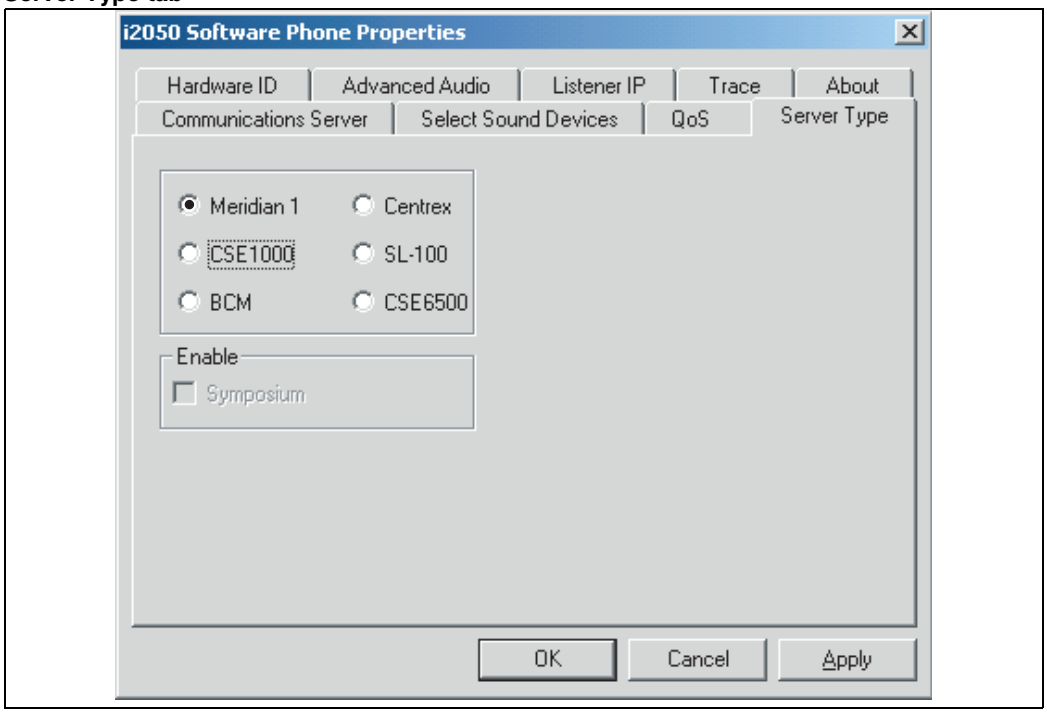
- 802.1Q and DiffServ on Windows 2000 Professional - Windows 2000 Professional requires a system-wide registry key setting to enable QoS capabilities. This value can only be created and modified with Administrator privileges. The key is:
  HKEY_LOCAL_MACHINE/SYSTEM/CurrentControlSet/Services/Qossp/EnablePriorityBoost
  The entry is a DWORD value and its values are:
  - value 0 - indicates do not enable QoS (default value which is equivalent to the absence of the key)
  - value 1 - indicates enable QoS

Qossp and Qossp/EnablePriorityBoost are not created by default at installation time. This is a system-wide registry setting that affects other applications and OS components. It is only in effect if the Windows packet scheduler is installed.

Server Type

Select Meridian 1 for the Server Type (see Figure 27). If the i2050 Software Phone is used in an ACD agent environment, check the Symposium box for ACD Hookswitch Enable.

Figure 27
Server Type tab



Advanced Options

The remaining tabs provide for more advanced settings. Changing the default selections in these tabs is usually not required.

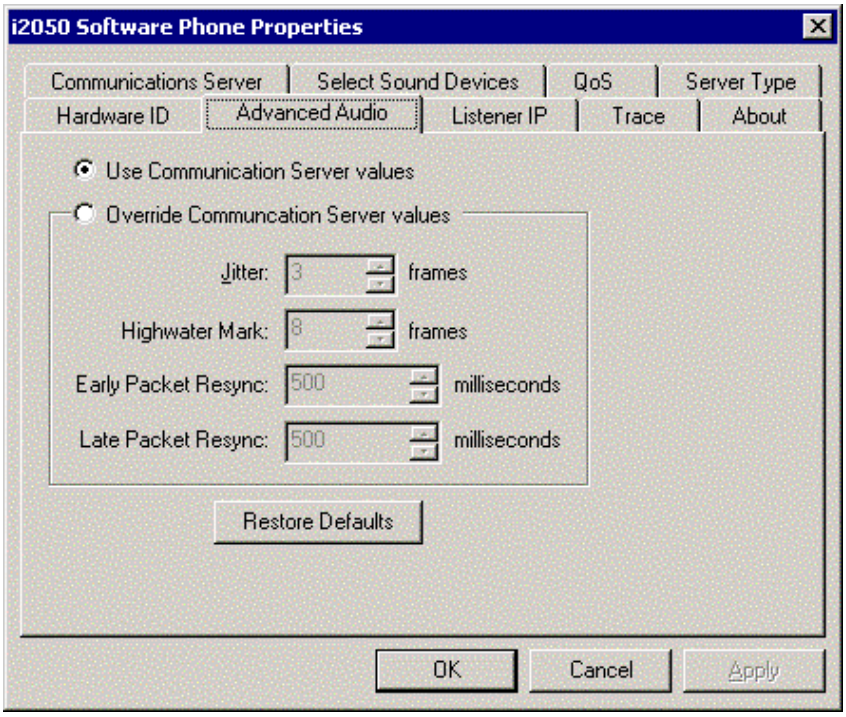
Hardware ID

The Hardware ID is sent to the TPS to uniquely identify this i2050, a large portion of which is the PC NIC card's MAC address, which should not be changed.

Advanced Audio

Under normal circumstances, the radio button for "Use Communication Server values" should be selected (refer to Figure 28). This uses the jitter buffer parameters sent from the TPS. This can be overridden by selecting "Override Communication Server values" and setting the jitter buffer as desired. This is not recommended.

Figure 28
Advanced Audio Tab



Listener IP

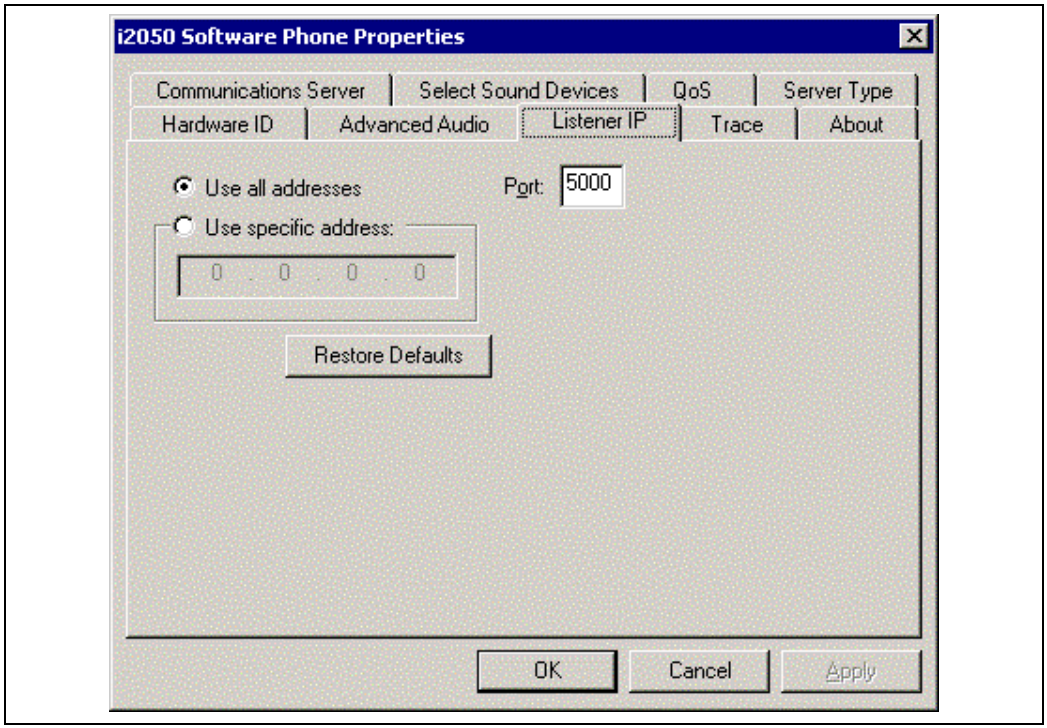
The Listener IP screen (shown in Figure 29) is intended for expert users only. This screen identifies the IP addresses and ports where the i2050 Software Phone is listening for traffic from the Communications Server. You can use this screen to override the port assignments when there is a conflicting application on the computer.

The attributes on the screen that can be configured are:

- Use all addresses (default) - The i2050 Software Phone listens to the IP addresses on all of the network interface cards on the PC for traffic from the Communications Server. This is the normal mode of operation.

- Use specific address - Using a specific address may be useful in cases where there is more than one Ethernet card and an application conflict exists.
- Port - This value may require adjustment if another application on the computer is using the same port. The two applications can co-exist by moving the port or IP address that the i2050 Software Phone is listening to. 4100 is the port address the i2050 Software Phone uses to communicate from the PC.

Figure 29
Listener IP tab



Trace

This option is for expert level debugging. The check box is disabled by default and should be left off.

Running the application for the first time

The i2050 application is started by:

- Select Start>Programs>Nortel Networks>i2050 Software Phone.
- Click on the desktop shortcut (if one was created during the installation).
- Automatic startup sequence.

  Note: If you want to have the i2050 Software Phone start automatically when the machine boots up, place a shortcut to the application in the Startup folder

When an i2050 Software Phone is started for the first time and connects to the network, it needs to execute a start-up sequence. The elements of the start-up sequence are:

- Get the IP parameters.
- Find a gateway server, and authenticate the user.

As the i2050 Software Phone registers with the ITG card,

- If a non-null node password is enabled, it prompts for a node number and password. Enter the node number and password using the keyboard or numeric keypad. After the password is verified, enter the TN of the i2050 Software Phone. See *Internet Telephony Gateway Line Card: Description, Installation, and Operation* (553-3001-204) for more on the password feature.
- If the null node password is configured and enabled, these screens are skipped and no option is provided to change the password.
- If the node password is disabled or not configured, it prompts for a node number and TN. Enter the node number and TN using the keyboard or numeric keypad.

The i2050 is now configured and can be used.

Changing the TN of an Existing i2050 Software Phone

This step is required if the user of this application has never logged in before.

Procedure 27
Changing the TN of an existing i2050 Software Phone

1 Exit the i2050 Software Phone application.

2 Restart the i2050 Software Phone application.

3 If the node password is not configured or disabled, go to Step 4.

If the node password is configured and enabled for the node, go to Step 5.

4 During the application startup, the i2050 Software Phone registers again with the TPS and the i2050 displays the existing node number and TN for a period of approximately 5 seconds. Go to Step 6.

5 If the password is configured and enabled for the node, the node number and password prompt is displayed for a period of approximately 5 seconds; enter the correct password within this 5-second period.

6 If the user activates the "Clear" softkey during the 5-second period, the existing node and TN will be cleared and the user will be prompted for new parameters.

End of Procedure

Removing an i2050 Software Phonefrom service

Procedure 28
Remove an i2050 Software Phone from service

1 Exit the i2050 Software Phone application.

2 Uninstall the i2050 application from the PC by removing it through Windows Add/Remove Programs.

3 In Overlay 11, OUT the TN.

End of Procedure

Internet Telephony Gateway Line 2.2

Contents

The following are the topics in this section:

Feature description 205
Shift key enhancement 206
ELAN TCP Transport 207
Password Protected TN Entry 207
Maintenance Telephone 211
Operating parameters 212
Feature interactions 212
Feature packaging 212
Feature implementation 212
Feature operation 212

References

- *Internet Telephony Gateway Line Card: Description, Installation, and Operation* (553-3001-204)
- *Internet Terminals: Description* (553-3001-217)

Feature description

The Internet Telephony Gateway (ITG) Line 2.2 card now supports the i2050 Software Phone by providing a communication gateway between the IP data network and the Meridian 1. This ITG Line 2.2 support of the i2050 Software Phone is in addition to the existing support for the i2004 Internet Telephone.

The following features are also supported in ITG Line 2.2:

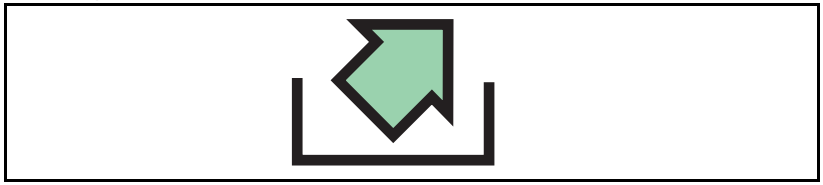
- TCP for ELAN transport
- Shift key enhancement
- Password protection for Terminal Number (TN) Entry

For information on the i2050 Software Phone feature description, see "i2050 Software Phone" on page 157.

Shift key enhancement

The ITG Line 2.2 feature enhances the functionality of the Shift key (shown in Figure 30). The Shift key is the third key from the lower right-hand corner of the phone and has an icon of an arrow pointing up and to the right as shown in The Shift key provides an additional six (6 - 11) soft feature keys.

Figure 30
Shift Key



By pressing the Shift key, the Feature key screen scrolls to the next page, and the feature key labels change accordingly. The feature key indicators bind with keys such that if one feature key is in use and the icon for this key is on, then scrolling to the next page displays the icon of the next page's feature key.

An example of the operation follows:

A user has feature key page 1 active and the Internet Telephone displays key labels and icons for key 6-11. An incoming call for DN 0 arrives; the Internet Telephone alerts, the message waiting lamp flashes, and the message "Shift for call" is displayed in the context area of the display. The icon for the page 1 feature key does not change. The user must scroll to the first page (feature key page 0) to see the DN key and its flashing icon; the call can then be answered by pressing this key.

ELAN TCP Transport

A TCP implementation is introduced in ITG Line 2.2 for the ELAN signaling between the ITG Line and the call server. TCP replaces the RUDP transport for signaling. This improves network performance in terms of efficiencies. Although TCP is used for the signaling protocol between the call server and ITG Line card, RUDP still remains for the keep alive mechanism; this means RUDP messages are exchanged to maintain the link status between the call server and the ITG Line card.

There is no change on TLAN side signaling mechanism. IP phones continue to use the RUDP transport protocol to communicate with ITG Line card.

The TCP protocol allows messages to be bundled. Unlike the RUDP transport which creates a separate message for every signaling message (such as display updates or key messages) the TCP transport bundles a number of messages and sends them as one packet.

Handshaking will be added to the Call Server and ITG Line software so that the TCP functionality is automatically enabled. A software version check is performed by the ITG Line application each time before it tries to establish a TCP link with the Meridian 1 CPU. If the version does not satisfy the minimum supported version, a RUDP link will be used instead.

Password Protected TN Entry

The current i2004 Internet Telephone displays Node Id and Terminal Number (TN) of the Internet Telephone for five seconds as the phone boots up. Internet Telephony Gateway (ITG) Line 2.2 introduces the availability of password protection for changing the TN on the i2004 Internet Telephone and i2050 Software Phone.

New Password Functionality

This feature adds basic Craftsperson Node Level TN Entry Password protection on the Internet Telephone to control registration with a virtual line TN on the Call Server. This feature does not provide a user password nor a station control password for Internet Telephones.

When the password is configured, instead of the Internet Telephone displaying a screen with Node Id and TN fields, the screen shows the four digit Node Id and a Password prompt. When the user enters the password, an asterisk (*) is displayed for each digit entered so that the actual password is not shown. After entering the Node Id and password and pressing OK, if the entered password passes the Connect Server's authentication, a screen is displayed with the TN field.

If the Node Id and password are not entered, the registration continues after five seconds and the TN is not displayed. If an invalid Node ID password is entered, the Node Id and Password screen is redisplayed. This screen will be redisplayed a maximum of two times, giving the technician a total of three chances to enter the password. After that, the registration will continue as if no entry had been done at the Internet Telephone. The technician can reboot the Internet Telephone and try again if more tries are needed.

If the technician has entered a zero length password, then the Node ID, TN and password screens are not displayed at all on the Internet Telephone during the registration process. This provides the most security as it prevents any entry of passwords or TNs from the Internet Telephone.

Temporary password

A temporary password can be entered which allows the technician to give temporary access to the TN for configuration. Giving a temporary password removes the need to distribute the Node password and having to change it afterwards. The temporary password automatically deletes itself after it has been used the defined number of times or when the duration expires, whichever comes first.

The following are examples of situations where the temporary password is useful:

- A department is installing i2050 soft clients. The technician creates a temporary password with an appropriate number of uses set, such as allowing two logins per phone in case there is a problem the first time, and the duration set to expire by the end of the weekend. The password access automatically ends before Monday morning (or sooner if the number of uses expires).

- A telecommuter needs to install an Internet Telephone client. The technician provides the temporary password which expires the next day or after two uses. When the Craftsperson Node Level TN Entry Password protection is enabled, the Set TN is not displayed as part of the Set Info sub menu of the Telephone Option menu. The Internet Telephone's TN can be retrieved on the core CPU through the OVL 20 PRT DNB and Overlay 32 IDU, or Overlay 80 TRAC, or PDT> rlmShow. It can also be found on the ITG Line card through ITGL> isetShowByIP.

Registration screens with TN password feature

The following screen (Figure 31) shows the existing TN entry screen that appears when the i2004/i2050 registers. This screen remains the same if the password protection is disabled or not configured.

Figure 31
Registration with no password checking

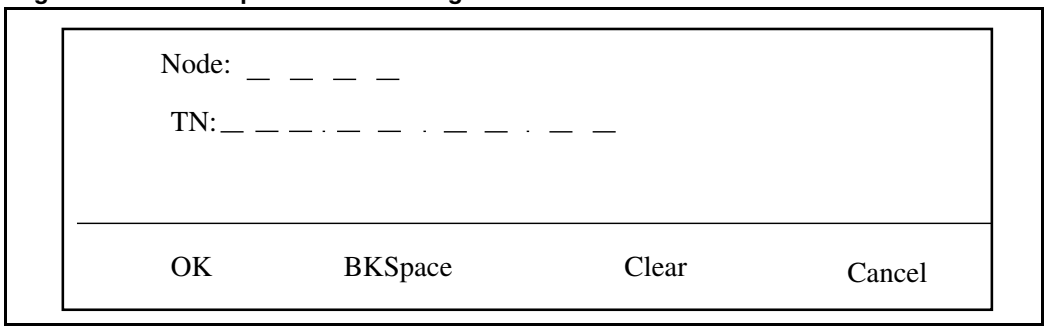
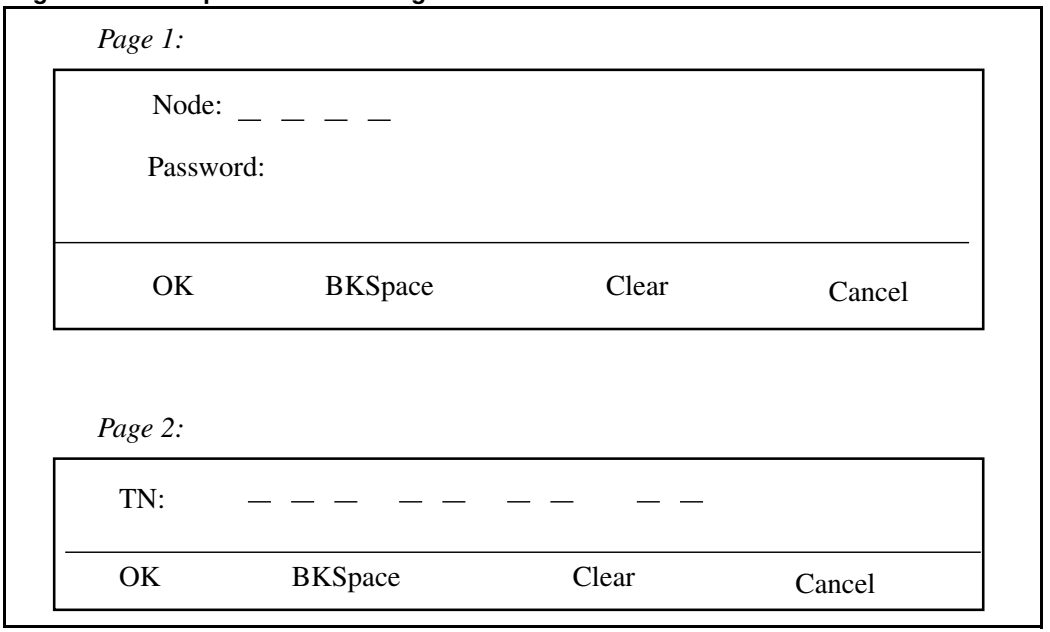


Figure 32 shows the TN entry screen when the TN password protection feature is configured with a non-zero length password and enabled. No underscores are printed for the Password entry so the maximum length of the password is not disclosed. If the correct password is entered, Page 2 in Figure 32 is displayed.

Figure 32
Registration with password checking



ITG Line CLI commands for password control

The new Craftsperson Node Level TN Entry Password is configured on any ITG Line card in the node. Six new CLI commands are added at the ITGL> command line.

- **nodePwdSet "password"** - Changes the node level TN entry password. password must be null or 6 to 14 digits in length; valid characters are 0-9 * #. The null password causes the Node ID and Password screen to be skipped during restart. This command can be entered at any time; the new password entered simply overwrites the prior password.
- **nodeTempPwdSet "tempPwd", uses, <time>** - Changes the node level TN entry temporary password. Valid password characters are 0-9 * #. If uses and time are both entered, the password expires on whichever comes first: uses reduced to zero or the expiration of time. If both uses and time are entered and are zero, it is the same as not setting the temporary password at all. This command can be entered at any time and the new parameters overwrite the existing temporary password's parameters.

— The password must be 6 to 14 digits in length. A null password cannot be entered.

— The uses parameter is a value from 0 - 1000. If 0 is entered, time is mandatory and the password only expires based on time.

— <time> is the duration in hours the password is valid. Optional if uses is non-zero, mandatory otherwise. Range is 0 - 240 (10 days).

- **nodePwdShow** - Displays the current password, state of password entry (enable/disable), temporary password, number of uses and time to expiry
- **nodePwdEnable** - Enables the password. All Internet Telephones registering after this command is entered display the password screen.
- **nodePwdDisable** - Disables both the main password and the temporary password (default state). After this command is entered, all Internet Telephones prompt the original Node Id and TN screen during registration.
- **nodeTempPwdClear** - Deletes the temporary password and resets its uses and time to zero.

When an ITG Line node is first installed, no password or temporary password is defined and the password feature is in the disabled state. If enabled by the nodePwdEnable command prior to setting the node password through nodePwdSet, the password protection is enabled with a null password (so the password and TN prompts are never displayed on the Internet Telephones).

Password security

This feature's intent is to prevent casual access to an Internet Telephone's TN for the purpose of registering to a different virtual line TN on the Meridian 1 Call Server after the Internet Telephones have been installed. It will not prevent a hacker or someone intent on accessing the system from achieving their goal. Neither the Internet Telephone nor the ITG Line cards have a means to provide encryption of the password.

Maintenance Telephone

An Internet Telephone functions as a maintenance telephone when you define the class-of-service as MTA (maintenance telephone allowed) in the Multi-line Telephone Administration program (LD 11). A maintenance telephone allows you to send commands to the system, but you can only use a subset of the commands that can be entered from a system terminal.

To access the system using the maintenance telephone, a SPRE code (defined in the customer data block) is entered followed by "91". To enter commands, press the keys that correspond to the letters and numbers of the command (for example, to enter LD 42 return, key in 53#42##).

The following overlays are accessible from a Meridian digital telephone for Remote Office and an Internet Telephone operating as a maintenance telephone: 30, 32, 33, 34, 36, 37, 38, 41, 42, 43, 45, 46, 60, and 62.

> ***Note:*** The above listed OVL operations are supported except for the TDS commands of OVL 34 and the TONE command OVL 46.

Operating parameters

This feature applies to Meridian 1 Release 25.40 and later.

For information on the i2050 Software Phone operating parameters, see "Operating parameters" on page 179.

Feature interactions

There are no feature interactions associated with this feature.

Feature packaging

The ITG Line 2.2 does not introduce any new packages.

Feature implementation

For information on the i2050 Software Phone feature implementation, see "Feature implementation" on page 180.

Feature operation

For information on the i2050 Software Phone feature operation, see "Feature operation" on page 181.

M3900 Phase III

Contents

The following are the topics in this section:

Feature description 214
- One-Button Feature Access 214
- System-Initiated Language Selection 216
- Virtual Office Enhancements 217
- Set-to-Set Messaging Enhancements 218
- Corporate Directory Search Enhancement 220
- 31-Digit Dialing 220
- Call Forward Enhancement for M3900 telephones 221
- Pause in Dialing String 222
- Special Character Support 223
- M3900 Headset State Support 224
- M3905 Phase III Enhancements 224

Operating parameters 224
- One-Button Feature Access 224
- System-Initiated Language Download 225
- Set-to-Set Messaging 225
- Pause in Dialing 225

Feature interactions 225

Feature packaging 225

Feature implementation 226
- Task summary list 226

Feature operation 232

Reference list

This section contains the following references:

- *M3900 Series Meridian Digital Telephones Description, Installation and Administration* (553-3001-216)

Feature description

M3900 Phase III introduces and enhances several features for M3900 telephones. The following sections describe these features.

Refer to *M3900 Series Meridian Digital Telephones Description, Installation and Administration* (553-3001-216) for further information on M3900 telephones.

One-Button Feature Access

With One-Button Feature Access, users have more direct access to the following:

- Call Log (Callers List)
- Call Log (Redial List)
- Personal Directory
- Corporate Directory

Callers List

M3900 Phase III introduces a Callers List soft key for M3903, M3904, and M3905 telephones. Press either the soft key or the programmable feature key to go directly to the new callers in the list.

> ***Note:*** If there are no new callers in your Callers List, when you press the Callers List soft key or programmable feature key, you go directly to the old Callers List.

The default soft key assignment for the Callers List is 27. However, if the system administrator configures a Callers List programmable feature key, the Callers List soft key is automatically removed. If necessary, the system administrator can add the soft key back on the predefined soft key number.

Password protection applies to One-Button Feature Access to the Callers List. If the password is enabled, when you press the Callers List soft key, a prompt appears requesting password entry. Once you enter the correct password, you can access the “new” Callers List.

Redial List

M3900 Phase III introduces a Redial soft key for M3903, M3904, and M3905 telephones. Press either the soft key or the programmable feature key to go directly to the Redial List.

The default soft key assignment for the Redial List is 28. However, if the system administrator configures a Redial List programmable feature key, the Redial List soft key is automatically removed. If necessary, the system administrator can add the soft key back on the predefined soft key number.

Password protection applies to One-Button Feature Access to the Redial List. If the password is enabled, when you press the Redial List soft key, a prompt appears requesting password entry. Once you enter the correct password, you can access the Redial List.

Personal Directory

With M3900 Phase III, press the Directory/Log fixed feature key to access the Personal Directory on M3904 telephones. On M3905 telephones, press the Directory/Log programmable feature key. You do not have to press the Select key after pressing the Directory/Log key. Once you press the Directory/Log key, you can immediately begin a search using the dial pad keys, provided that Personal Directory was highlighted in the selection list.

> ***Note:*** M3900 Phase III allows you to perform a three-letter search in the Personal Directory.

Corporate Directory

Press the Applications key to access the Corporate Directory on M3903, and M3904. On M3905 telephones, press the Directory/Log programmable feature key. With M3900 Phase III, you do not have to press the Select key after pressing the Applications key. Once you press the Applications (or Directory/Log) key, you can immediately begin a search using the dial pad keys, provided that Corporate Directory was highlighted in the Applications selection list.

Full Duplex Handsfree

The Full Duplex Handsfree (FDHF) functionality allows simultaneous two-way communication during a handsfree call. For Full Duplex Handsfree functionality, you require an M3904 Phase III set equipped with an FDHF cartridge.

The receive audio level is attenuated during the FDHF mode while both parties are speaking. Therefore, fluctuations in the receive volume can occur during the FDHF call.

During a call, the FDHF cartridge can be inserted or removed from the ACM without interrupting an established call. If the FDHF cartridge is removed, half-duplex operation is restored.

Table 19 shows FDHF interoperability with other M3900 cartridges.

Table 19
FDHF Interoperability

	External Alerter and Recording Interface	CTIA	ATA	PC Utility
FDHF	YES See Note below	YES	NO	YES
Note: FDHF works with the External Alerter and Recording Interface functionality; however, FDHF does not work with the External Alerter and Recording Interface when a recording device is connected.				

To initiate Full Duplex Handsfree functionality, follow the existing steps for Handsfree operation in the *M3901, M3902, M3903, and M3904 User Guide*

System-Initiated Language Selection

With the System-Initiated Language Selection feature, the system administrator can define a default language on a customer basis for M3902, M3903, M3904, and M3905 telephones. The default language defined by the system administrator applies to all new M3900 telephones configured for the customer group.

When the system administrator configures a new M3900 telephone, the default language is sent to the telephone as part of the key map download. If necessary, the system administrator can override the system default.

If the user changes the default language for their telephone, the new language selection is uploaded to the Meridian 1 system. The new language selection overrides the system default language configured for the Terminal Number (TN).

This functionality allows Virtual Office workers to store their language selection on the Meridian 1 system. When the virtual worker logs in to a host telephone, the language selection changes to the language defined for the virtual worker.

Virtual Office Enhancements

Clearing of the Callers List and Redial List

With M3900 Phase III, the Meridian 1 system clears the Redial and Callers lists when a virtual office worker logs in or out of an M3903 or M3904 Host telephone. The system administrator configures this functionality by defining Class of Service as Erase List Allowed (ELA) in Overlay 11 for the M3903 or M3904 Virtual telephone. When the ELA Class of Service is defined, the Callers List and Redial List are automatically cleared when the virtual worker logs in or out.

Clearing of the Directory Services Password

With M3900 Phase III, the Meridian 1 system clears the Directory Services password when a virtual office worker logs in or out of an M3903 or M3904 Host telephone. The system administrator configures this functionality by defining Class of Service as Erase List Allowed (ELA) in Overlay 11 for the M3903 or M3904 Virtual telephone.

This Clearing of Password functionality allows multiple virtual workers, using the same host telephone, to have access to password-protected features if one of the users turns on the password and does not turn it off when they log out.

Automatic Logout for Virtual Office

M3900 Phase III introduces automatic logout for virtual workers. If a virtual worker, who is already logged on to Set A, tries to log on to Set B, the system automatically logs the virtual worker off Set A and logs them on to Set B (provided that the virtual worker enters the correct login password).

The system administrator enables this functionality in Overlay 15 at the Virtual Office Automatic Logout (VO_ALO) prompt. The system administrator can also define a time at which all virtual terminals are automatically logged out. The system administrator configures the automatic logout time at the Virtual Office Automatic Logout Time (VO_ALOHR) prompt in Overlay 15.

If the telephone is busy at the automatic logout time (for example, if the virtual worker is using Corporate Directory or Set-to-Set Messaging), it is not logged out until it becomes idle.

> ***Note:*** If a user logs in to a virtual telephone after automatic logout, the telephone does not automatically log out a second time.

Speed Call for Virtual Office

With M3900 Phase III, M3900 telephones support Speed Call (SCU/SCC) and System Speed Call (SSU only) on Virtual Terminal Numbers.

Set-to-Set Messaging Enhancements

Set-to-Set Messaging Enhancements allow the system administrator to predefine ten messages for the M3903, M3904, and M3905 telephones. The telephone user can select one of the messages as their set-to-set message. The telephone user can also edit a message before selecting it as their set-to-set message.

When the system administrator chooses the system-initiated language for the M3900 telephones, the list of ten predefined set-to-set messages for that language is loaded into memory from the hard disk.

When the predefined messages are in memory, the system administrator can customize them for a particular customer group.

> ***Note:*** Each customer group on the Meridian 1 system can have its own default language and list of predefined set-to-set messages for its end users.

When a telephone has Set-to-Set Messaging Allowed (STSA) Class of Service defined, the user can select and edit any of the ten messages listed in Table 20. However, only one of the messages is stored as the user's set-to-set message.

The user presses the Up and Down navigation keys to scroll through the list of predefined messages. When scrolling down, the list wraps from message ten to message one. When scrolling up, the list wraps from message one to message ten.

Table 20
Predefined set-to-set messages

Message #	Message
1	Please leave message
2	Back to work
3	In a meeting
4	On a conference call
5	At lunch
6	Busy, call
7	Out of the office today
8	On a business trip
9	Project deadline today
10	Will reply after

With M3900 Phase III, the Set-to-Set Messaging screen has three soft keys. The ON/OFF key toggles the Set-to-Set Messaging feature on or off. The ON/OFF key only appears if the currently displayed message is saved. The Edit key allows the user to customize the message displayed on the screen. The Select soft key appears only if the currently displayed message is not saved. When pressed, this soft key selects the currently displayed message as the set-to-set message to be stored.

Set-to-Set Messaging Enhancements introduces a Message (Msg) field. This field contains either the number of the displayed message or the word "Saved". The system saves only one message. A message is saved when the user does one of the following:

- highlights a message and then presses Select
- edits a message and then presses Done

Note: When the user performs one of the above, the new message overrides any previously saved messages.

When the user edits a message, the modified message is displayed when the user scrolls through the list. However, if the user then edits another message, that message replaces the previously modified message.

Corporate Directory Search Enhancement

The Corporate Directory Search Enhancement introduces the Resume soft key to the Corporate Directory screens of the M3903, M3904, and M3905 telephones. The Resume key allows you to return to the Corporate Directory Find screen to enter additional characters and to continue your search without starting over from the beginning.

The Resume key appears on the following Corporate Directory screens:

- List view
- Card view
- No matches found

When you press the Resume soft key, the Corporate Directory Find screen returns with the information that you previously entered. The cursor is placed after the last letter that you entered. You can enter additional letters and then press the Done soft key. This brings you to a new point in the directory.

31-Digit Dialing

With the 31-Digit Dialing feature, M3900 display screens accommodate dialing strings of up to 31 digits. This allows the screens to fully display long dialing strings, such as Calling Card numbers and access codes.

The M3902 telephone has a one-line display. Use the Left/Right Navigation keys to scroll through the digits on the line.

M3903, M3904, and M3905 display screens accommodate 24 characters on each line. For dialing strings greater than 24 characters, the number automatically wraps to the second line.

Table 21 lists the features that support 31-Digit Dialing on M3902, M3903, M3904, and M3905 telephones.

Table 21
Features that support 31-Digit Dialing

	M3902	M3903	M3904	M3905
Personal Directory			X	X
Call Log		X	X	X
Redial		X	X	X
Predial	X	X	X	X

Call Forward Enhancement for M3900 telephones

The Call Forward Enhancement feature modifies the method for activating Call Forward on M3903, M3904, and M3905 telephones.

To forward your calls or change the previously stored Call Forward number, perform the following steps:

1 Press the Forward key.
The previously stored Call Forward number appears, if one exists.

2 If you want to keep the previously stored Call Forward number, press Done.
If you want to enter a new Call Forward number, go to Step 3.

3 Enter the new Call Forward number.
When you start to enter the new number, the initial Call Forward number automatically deletes.

Note 1: You can use the Delete key to delete each digit in the Call Forward number shown. To edit the number, use the Left or Right Navigation keys to move the cursor.

Note 2: A Cancel key also appears. Press the Cancel key to exit without changing the previously stored Call Forward number.

4 Press Done.

Pause in Dialing String

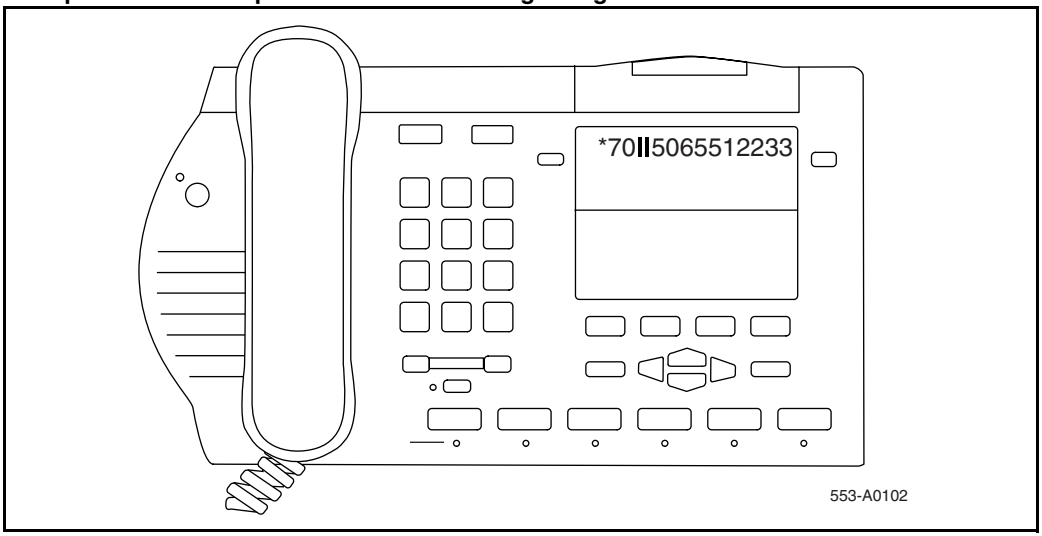
With M3900 Phase III, M3902, M3903, M3904, and M3905 telephones support a pause in dialing. This pause is often required when a user dials remote devices, such as answering machines, Interactive Voice Response (IVR) systems, auto attendants, and tandem switches.

The Pause feature enters a 1.5-second delay in a dialing sequence. The user can add the delay while programming or editing an entry in the Personal Directory, Callers List, Redial List, and Predial List.

This feature introduces a Pause soft key. To enter a Pause in the dialing string while editing a number, press the Pause soft key. A Pause place marker appears in the dialing string. The place marker appears as two parallel bars, and takes up one space in the dialing string.

Note: You can enter multiple pauses for longer delays.

Figure 33
Example of the Pause place marker in a dialing string



Special Character Support

With M3900 Phase III, M3902, M3903, M3904, and M3905 telephones support all special characters found on a PC keyboard. Special character support allows a user to input special characters when using the edit mode in the Personal Directory and Set-to-Set Messaging. For example, a user can enter a name with an accent in their Personal Directory (for example, Josée).

The special character set includes all characters from the extended portion of the ASCII character set. The extended ASCII character set that supports the telephone's current language is the character set appears in the edit mode. The special character set contains up to 130 characters. It is displayed in six lines with 24 characters on each line. Use the navigation keys to scroll through the list or to move through an individual 24-character line.

The special character set does not include upper and lower case letters or numerals. Use the keypad of the telephone to define these characters.

M3900 Headset State Support

The M3903, M3904, and M3905 telephones support the use of a headset. With M3900 Phase III, for the headset to operate, the system administrator no longer has to set the Class of Service to Handsfree Allowed (HFA) in Overlay 11.

M3905 Phase III Enhancements

With M3900 Phase III, M3905 telephones support Context-Sensitive Soft Keys, Corporate Directory, and Set-to-Set Messaging.

Operating parameters

One-Button Feature Access

Follow the assignments listed in Table 22 to configure Context-Sensitive soft keys on M3903, M3904, and M3905 telephones.

Table 22
Context-Sensitive Soft Key default assignments (Part 1 of 2)

Key number	Feature
17	Transfer (TRN)
18	Conference (A03/A06)
19	Call Forward (CFW)
20	Ring Again (RGA)
21	Call Park (PRK)
22	Call Pickup (RNP)
23	Speed Call (SCU/SCC) or System Speed Call (SSU/SSC)
24	Privacy Release (PRS)
25	Charge Account (CHG)
26	Call Party Number (CPN)
27	Callers List (CLT)

Table 22
Context-Sensitive Soft Key default assignments (Part 2 of 2)

Key number	Feature
28	Redial List (RLT)

For M3904 and M3905 telephones, One-Button Feature Access keys for the Callers and Redial lists cannot be programmed on a Display Based Accessory (DBA) or a Key-Based Accessory (KBA).

System-Initiated Language Download

For the initial system-initiated language download, if the system administrator chooses a language that is not supported by one of the telephones, the language selection does not change and an error message appears on the TTY.

Set-to-Set Messaging

If the system administrator chooses a language and the file containing the ten predefined messages for that language cannot be found on the hard disk, the list of messages stored in memory will be completely blank. The system administrator can still create a list of customized messages in the same manner as if they were only modifying one or two of the predefined messages.

If during an edit session, the user deletes an entire message and then presses Done, the message reverts to the default message.

Pause in Dialing

The Pause in dialing String feature is not supported for a Personal Computer (PC).

Feature interactions

M3900 Phase III does not introduce any additional feature interactions.

Feature packaging

M3900 Phase III features require the following packages:

- M2000 Digital Sets (DSET) package 88

- Aries Digital Sets (ARIE) package 170
- Set-to-Set Messaging (STS_MSG) package 380
- Corporate Directory (CDIR) package 381
- Virtual Office (VIRTUAL_OFFICE) package 382
- M3900 Phase III Productivity Enhancement (M3900_PROD_ENH) package 386 (for Set-to-Set Messaging Enhancements, System-Initiated languages, and One-Button Feature Access)
- M3900 Phase III Virtual Office Enhancement (VIR_OFF_ENH) package 387 (for Virtual Office Automatic Logout and for Clearing of Callers List, Redial List, and Directory Services Password)

Feature implementation

Task summary list

The following is a summary of the tasks in this section:

1 LD 15 - Assign a default language and customize set-to-set messages.

2 LD 15 - Enable Virtual Office Automatic Logout and configure the automatic logout time for Virtual Office terminals.

3 LD 11 - Configure the Callers List and Redial List keys on Context-Sensitive Soft Keys or a Programmable feature keys.

4 LD 11 - Configure the default language for the M3900 telephone.

5 LD 11 - Allow or deny the erasing of the Callers and Redial lists for virtual terminals.

LD 15 – Assign a default language and customize set-to-set messages.

Prompt	Response	Description
REQ:	NEW CHG	Add new data. Change existing data.
TYPE:	FTR	Features and options.
CUST	xx	Customer number.
...		

DFLT_LANG		M3900 default language.
	(ENG) FRE GER DUT SPA ITA NOR SWE DAN POR FIN POL CZE HUN JAP RUS LAT TUR	English (default) French German Dutch Spanish Italian Norwegian Swedish Danish Portuguese Finnish Polish Czech Hungarian Japanese Russian Latvian Turkish
STS_MSG	(NO) YES	Modify Set-to-Set messages.
MSG 01	<CR> <text string>	Keeps current message. Input the new message to be displayed (up to 24 characters).
...		
MSG 10	<CR> <text string>	Keeps current message. Input the new message to be displayed (up to 24 characters).

LD 15 – Assign a default language and customize set-to-set messages.

Prompt	**Response**	**Description**
REQ:	NEW CHG	Add new data. Change existing data.
TYPE:	FTR	Features and options.
CUST	xx	Customer number.
...		

DFLT_LANG		M3900 default language.
	(ENG)	English (default)
	FRE	French
	GER	German
	DUT	Dutch
	SPA	Spanish
	ITA	Italian
	NOR	Norwegian
	SWE	Swedish
	DAN	Danish
	POR	Portuguese
	FIN	Finnish
	POL	Polish
	CZE	Czech
	HUN	Hungarian
	JAP	Japanese
	RUS	Russian
	LAT	Latvian
	TUR	Turkish
STS_MSG	(NO) YES	Modify Set-to-Set messages.
MSG 01	<CR>	Keeps current message.
	<text string>	Input the new message to be displayed (up to 24 characters).
...		
MSG 10	<CR>	Keeps current message.
	<text string>	Input the new message to be displayed (up to 24 characters).

LD 15 – Assign a default language and customize set-to-set messages.

Prompt	**Response**	**Description**
REQ:	NEW	Add new data.
	CHG	Change existing data.
TYPE:	FTR	Features and options.
CUST	xx	Customer number.
...		

DFLT_LANG		M3900 default language.
	(ENG) FRE GER DUT SPA ITA NOR SWE DAN POR FIN POL CZE HUN JAP RUS LAT TUR	English (default) French German Dutch Spanish Italian Norwegian Swedish Danish Portuguese Finnish Polish Czech Hungarian Japanese Russian Latvian Turkish
STS_MSG	(NO) YES	Modify Set-to-Set messages.
MSG 01	<CR> <text string>	Keeps current message. Input the new message to be displayed (up to 24 characters).
...		
MSG 10	<CR> <text string>	Keeps current message. Input the new message to be displayed (up to 24 characters).

LD 15 – Configure the automatic logout time for Virtual Office terminals.

Prompt	**Response**	**Description**
REQ:	NEW CHG	Add new data. Change existing data.
TYPE:	FTR	Features and options.
CUST	xx	Customer number.
...		

VO_ALO	(NO) YES	Disable Virtual Office Automatic Logout (default). Enable Virtual Office Automatic Logout.
VO_ALOHR	(0) - 23	Virtual Office Automatic Logout time. Use the 24-hour clock.

LD 11 - Configure the Callers List and Redial List keys on Context-Sensitive Soft Keys or Programmable feature keys.

Prompt	Response	Description
REQ:	NEW CHG	Add new data. Change existing data.
TYPE:		M3900 series telephone types.
	3903H 3904H 3903V 3904V 3905	M3903 Host telephone M3904 Host telephone M3903 Virtual telephone M3904 Virtual telephone M3905 telephone
...		
KEY	27 CLT	Configure Callers List key on a Context-Sensitive Soft Key. CLT and NUL are the only options for KEY 27.
KEY	28 RLT	Configure the Redial List key on a Context-Sensitive Soft Key. RLT and NUL are the only options for KEY 28.
KEY	XX CLT	Configure the Callers List key on an available programmable feature key.
KEY	XX RLT	Configure the Redial List key on an available programmable feature key.

LD 11 - Configure the default language for the M3900 telephone.

Prompt	Response	Description
REQ:	NEW CHG	Add new data. Change existing data.

TYPE:		M3900 series telephone types.
	3902	M3902 telephone
	3903H	M3903 Host telephone
	3904H	M3904 Host telephone
	3903V	M3903 Virtual telephone
	3904V	M3904 Virtual telephone
	3905	M3905 telephone
...		
MLNG		M3900 language selection. The default is the language selection chosen for the customer in Overlay 15. ***Note:*** The user can change the language defined at the MLNG prompt from their telephone.
	ENG	English
	FRE	French
	GER	German
	DUT	Dutch
	SPA	Spanish
	ITA	Italian
	NOR	Norwegian
	SWE	Swedish
	DAN	Danish
	POR	Portuguese
	FIN	Finnish
	POL	Polish
	CZE	Czech
	HUN	Hungarian
	JAP	Japanese
	RUS	Russian
	LAT	Latvian
	TUR	Turkish

LD 11 – Allow or deny the erasing of the Callers and Redial lists for virtual terminals.

Prompt	Response	Description
REQ:	NEW	Add new data.
	CHG	Change existing data.

TYPE:		M3900 series telephone types.
	3903V 3904V	M3903 Virtual telephone M3904 Virtual telephone
...		
CLS	(ELD) ELA	Erase Lists (Denied)/Allowed.

Feature operation

Refer to the appropriate user guides/cards for information on how to operate the features described in this chapter.

Network Break-in and Force Disconnect

Contents

The following are the topics in this section:

Feature description 233
Network Break-in 234
Network Force Disconnect 234
Network Break-in and Force Disconnect post-dial example 235
Priority Levels 236
Operating parameters 237
Feature interactions 238
Feature packaging 241
Feature implementation 242
Task summary list 242
Feature operation 245
Network Break-in operation 245
Network Force Disconnect operation 248

Feature description

The Network Break-in and Force Disconnect feature allows analog (500/2500 type) telephones, Nortel Networks Internet Telephones, or Meridian Digital Telephones to perform the following functions:

- break in to an established two-party call
- force disconnect an established two-party call

Network Break-in

With Network Break-in, a telephone can break-in to an established two-party call. When the telephone initiates a break-in operation, it is placed in conference with the other two parties. A warning tone can be provided to all parties. The warning tone option must be allowed in Overlay 15 for the wanted party's customer group.

The user of the overriding telephone can initiate the break-in operation using one of the following:

- Priority Override Network Wide (PONW) key for an Internet Telephone or a Meridian Digital Telephone. The PONW lamp on the overriding telephone provides the status of the break-in operation.
- Priority Override Network Wide (PONW) Flexible Feature Code (FFC) for analog (500/2500 type) telephones

Network break-in applies to both pre- and post-dial operations. For a pre-dial operation, the user of the overriding telephone presses the PONW key or dials the PONW FFC prior to dialing the wanted party's DN.

For a post-dial operation, the user of the overriding telephone dials the wanted party's DN. When they receive a busy tone, they then press the PONW key or dial the PONW FFC.

Network Force Disconnect

Network Force Disconnect allows a telephone to disconnect an established two-party call. A call is then established between the overriding telephone and the wanted telephone. A single warning tone can be provided to all parties before the disconnect operation takes place. The warning tone option must be allowed in Overlay 15 for the wanted party's customer group.

The user of the overriding telephone can initiate the force disconnect operation using one of the following:

- Forced Disconnect (FDIS) key for Nortel Networks Internet Telephones or Meridian Digital Telephones
  The FDIS lamp on the overriding telephone provides the status of the force disconnect operation
- Forced Disconnect Flexible Feature Code (FFC) for analog (500/2500 type) telephones

Network Force Disconnect applies to both pre- and post-dial operations. For a pre-dial operation, the user of the overriding telephone presses the FDIS key or dials the PONW FFC prior to dialing the wanted party's DN.

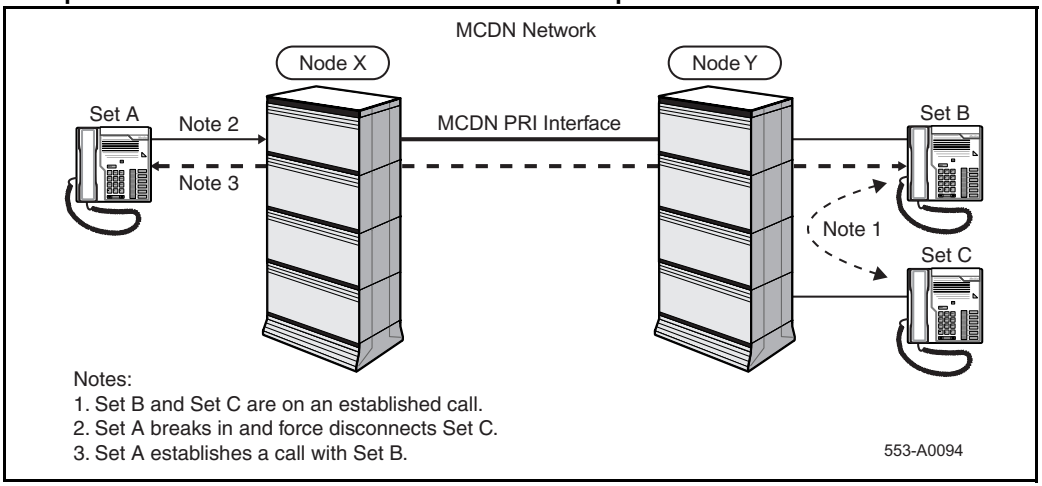
For a post-dial operation, the user of the overriding telephone dials the wanted party's DN. When they receive busy tone, they then press the FDIS key or dial the FDIS FFC.

Network Break-in and Force Disconnect post-dial example

As illustrated in Figure 34, Node X and Node Y are two Meridian 1 systems connected by a Meridian Customer Defined Network (MCDN) Primary Rate Interface (PRI). Set A, a Nortel Networks Internet Telephone or Meridian Digital Telephone on Node X, is the overriding party. Sets B and C are in an established two-party call on Node Y. Set B is the wanted party and Set C is the unwanted party.

Set A dials Set B and receives a busy tone. Set A presses the PONW key. Set A enters into a conference with Sets B and C. A warning tone is provided to all three parties. Set A presses the FDIS key. Set C is disconnected. Sets A and B are placed in a simple, two-party call.

Figure 34
Example of a network break-in and force disconnect operation



Priority Levels

Priority Levels (PLEVs) are configured individually on each telephone. A telephone can break-in to or disconnect an established call only if it has a Priority Level greater than or equal to the Priority Levels of the wanted and unwanted parties. If the unwanted party is an external trunk call, the PLEV of the route applies.

Table 23 lists the various PLEVs that can be assigned to a telephone or route.

Table 23
Priority levels

Priority Levels	Overriding Party	Wanted/Unwanted Parties
0	Cannot override	Cannot be overridden
1	Cannot override	Cannot be overridden
2	Can override level 2	Can be overridden by levels 2-7
3	Can override levels 2 and 3	Can be overridden by levels 3-7
4	Can override levels 2-4	Can be overridden by levels 4-7
5	Can override levels 2-5	Can be overridden by levels 5-7
6	Can override levels 2-6	Can be overridden by levels 6 and 7
7	Can override levels 2-6 Assign level 7 to ACD supervisors only	Cannot be overridden

Operating parameters

This feature applies to analog (500/2500 type) telephones, Nortel Networks Internet Telephones, and Meridian Digital Telephones.

The Network Break-in and Force Disconnect feature is supported when the overriding and wanted parties are:

- on the same node
- on different nodes and connected by an MCDN interface

The unwanted party can be any of the following. Refer to Figure 34:

- an analog (500/2500 type) telephone, Nortel Networks Internet Telephone, or Meridian Digital Telephone located on the same node as the wanted party (Node Y)

- an analog (500/2500 type) telephone, Nortel Networks Internet Telephone, or Meridian Digital Telephone located on a different node (Node X) and connected by an MCDN interface to the wanted party's node (Node Y)
- an external user in conversation with the wanted party over Direct Inward Dialing (DID), TIE, or Central Office trunks (COT). The external interface to Node Y can be analog trunks or ISDN CO connectivity.

If the force disconnect request is rejected, an overflow tone is provided. For Internet Telephones or digital telephones, the PONW/FDIS lamp winks and overflow tone is provided.

If the wanted party's telephone is idle when the pre-dial operation begins, the pre-dial operation is cancelled and the wanted party's telephone rings.

Feature interactions

Attendant Call

In a stand-alone environment, a telephone cannot break-in to an attendant call. In a networking environment, however, Network Attendant Service (NAS) must be enabled to avoid a telephone breaking in to an attendant call.

Automatic Call Distribution

Any telephone with a PLEV of 7 (except for a 500 ACD agent telephone) can be used to break-in to an ACD call. Knowing the Agent's position ID is required.

No telephone can be used to break-in to a supervisor's call.

An ACD telephone goes in Not Ready (NRD) state when it invokes the Network Break-in and Forced Disconnect feature by pressing the Priority Network Override (PONW) or Force Disconnect (FDIS) key.The ACD telephone is removed from the idle agent's queue and is then no longer serving the queue.

After the call is released, the telephone remains in the NRD state. You have to manually remove the telephone from the NRD state by pressing the NRD key again. If the telephone does not have an NRD key, you have to press the ACD key to log into the telephone.

A conference is set up if:

- Supervisor Disconnects: Agent and the Customer are in a call.
- Agent Disconnects: Supervisor and Customer are in a call.
- Customer Disconnects: Supervisor and Agent are in a call.

A post-dial operation for the Network Break-in and Forced Disconnect on an ACD agent is not allowed.

An FDIS operation on an ACD agent is not allowed.

A two-way speech path is always established.

Call Detail Recording

The Network Break-in and Force Disconnect feature does not affect Call Detail Recording (CDR) records. On the CDR records, Network Break-in is treated as a normal conference and Force Disconnect is treated as normal call clearing.

Call Forward
Call Waiting
Camp on
Hunt

Post-dial operations do not override the Call Forward, Call Waiting, Camp on, or Hunt features configured on the wanted party's telephone.

Pre-dial operations override the Call Forward, Call Waiting, Camp on, and Hunt features configured on the wanted party's telephone.

If Call Forward or Hunt is performed on a local telephone or to a telephone on a different MCDN node, then post-dial/force disconnect occurs on the redirected telephone (if the break-in conditions are met).

If there is a call waiting or camped on the wanted party's telephone, the pre-dial operation can still break-in or force disconnect.

Call Park

Network break-in or force disconnect operations cannot be performed on a parked call.

Conference

Network break-in or force disconnect operations cannot be performed on a telephone that is in conference. However, if the originator of a conference is on a different node, it can break-in and force disconnect the unwanted party from the conference. A call is then established between the overriding party and the wanted party.

Do Not Disturb

Network break-in or force disconnect operations cannot be performed if Do Not Disturb (DND) is configured on the telephone.

Make Set Busy

Network break-in or force disconnect operations cannot be performed if Make Set Busy (MSB) is configured on the telephone.

Meridian Mail

Network break-in or force disconnect operations do not occur when the wanted party is using Meridian Mail or Call Pilot.

Orbit Prevention

If a call is forwarded to a telephone on a different MCDN node while Orbit Prevention is enabled, it removes the Call Forward operation for the trunk-to-trunk call for a specified period of time. During this period of time, the post-dial operation cannot be performed.

The Flexible Orbiting Prevention Timer (FOPT) is set to 14 seconds by default. Most calls will be released within this time if the post-dial operation is performed after the timer expires. As a result, the FOPT should be set to a lower value.

Priority Override

The Priority Override feature is independent of the Network Override and Force Disconnect feature.

Ring Again

When the wanted party's telephone is busy, the overriding telephone can either trigger ring again or post-dial break-in/force disconnect.

Virtual Network Services

Virtual Network Services (VNS) supports the Network Break-in and Force Disconnect feature.

Feature packaging

The Network Break-in and Force Disconnect feature introduces Priority Network Override (PONW) package 389.

Network Break-in and Force Disconnect also requires the following existing packages:

- ISDN Signaling (ISDN) package 145
- Primary Rate Access (PRA) package 146
- Primary Rate Interface2 (PRI2) package 150
- Multi-Serial Data Link (MSDL) package 222

Feature implementation

Task summary list

The following is a summary of the tasks in this section:

1. LD 17 - Configure the Release ID for the D-channels.
2. LD 15 - Allow or deny the Break-in Warning Tone.
3. LD 16 - Configure the Priority Level (PLEV) for the route.
4. LD 10 - Configure Break-in Warning Tone options and PLEV values for analog (500/2500 type) telephones.
5. LD 11 - Configure break-in and force disconnect Classes of Service, function keys, warning tone options, and PLEV values.
6. LD 57 - Configure the Flexible Feature Codes (FFCs).

LD 17 – Configure the Release ID for the D-channels.

Prompt	Response	Description
REQ	CHG	Change existing data.
TYPE	ADAN	Action Device and Number.
ADAN	CHG DCH xx	Change D-channels.
RLS	xx	Software Release ID of the switch at the far-end of the D-channel, where xx is 25 or higher.

LD 15 – Allow or deny the Break-in Warning Tone.

Prompt	Response	Description
REQ:	CHG	Change existing data.
TYPE:	FTR	Feature data.
CUST	xx	Customer number.

...		
OPT	(BWTD) BWTA	Break-in Warning Tone Denied (default). Break-in Warning Tone Allowed.

LD 16 – Configure the Priority Level for the route.

Prompt	Response	Description
REQ	NEW CHG	Add new data. Change existing data.
TYPE	RDB	Route Data Block.
ROUTE	xxx	Route Number.
PLEV	0-(2)-7	Priority Level.

LD 10 – Configure Break-in Warning Tone options and PLEV values for analog (500/2500 type) telephones.

Prompt	Response	Description
REQ:	NEW CHG	Add new data. Change existing data.
TYPE:	500	Telephone type.
CLS	(NOVD) NOVA	Network Override/Break-in Denied (default). Network Override/Break-in Allowed.
CLS	(FDSD) FDSA	Force Disconnect Denied (default) Force Disconnect Allowed
PLEV	0-(2)-7	Priority Levels.

LD 11 – Configure break-in and force disconnect Classes of Service, function keys, warning tone options, and PLEV values.

Prompt	Response	Description
REQ:	NEW CHG	Add new data. Change existing data.
TYPE:	2616	Telephone type.
CLS	(NOVD) NOVA	Network Override/Break-in Denied (default). Network Override/Break-in Allowed.
CLS	(FDSD) FDSA	Force Disconnect Denied (default) Force Disconnect Allowed
KEY	PONW	Priority Override/Break-in Networkwide Key.
KEY	FDIS	Force Disconnect Key.
PLEV	0-(2)-7	Priority Levels.

LD 57 – Configure the Flexible Feature Codes (FFCs).

Prompt	Response	Description
REQ	NEW CHG	Add new data. Change existing data.
TYPE:	FFC	Flexible Feature Code.
CUST	xx	Customer number.
...		
CODE	PONW	FFC Type.
PONW	xxxx	Activate PONW.
CODE	FDIS	FFC Type.
FDIS	xxxx	Activate FDIS.

Feature operation

This section describes the procedures for performing the network break-in and force disconnect operations on analog (500/2500 type) telephones, Nortel Networks Internet Telephones, or Meridian Digital Telephones. The feature operation is described using Sets A, B, and C from Figure 34 on 236.

Network Break-in operation

Post-dial operation for Internet Telephones or Meridian Digital Telephones

Table 24 shows the post-dial network break-in operation for a Meridian Digital Telephone.

Table 24
Post-dial network break-in operation for an Internet Telephone or a Meridian Digital Telephone

Actions	Response	Set A PONW lamp status
Sets B and C are involved in a two-party call.	—	—
Set A dials Set B.	Set A receives a busy tone.	—
Set A presses the PONW key.	Set A enters into a Conference with Sets B and C. If configured, a warning tone is provided to all three parties.	PONW key lamp is lit.
If Set C disconnects...	Sets A and B are placed in a simple, two-party call. The warning tone is removed.	PONW key lamp goes dark.
If Set B disconnects...	Set C is disconnected. The warning tone is removed. Set B rings.	Meridian PONW key lamp goes dark.

Pre-dial operation for an Internet Telephone or a Meridian Digital Telephone

Table 25 shows the pre-dial network break-in operation for an Internet Telephone or a Meridian Digital Telephone.

Table 25
Pre-dial network break-in operation for an Internet Telephone or a Meridian Digital Telephone

Actions	Response	Set A PONW lamp status
Sets B and C are involved in a two-party call.	—	—
Set A presses the DN key and then presses the PONW key.	Set A receives dial tone.	The PONW key lamp flashes. This indicates the pre-dial mode.
Set A dials the DN of Set B	Set A enters into a conference with Sets B and C. If configured, a warning tone is provided to all three parties.	The PONW key lamp is lit.
If Set C disconnects...	The warning tone is removed. Sets A and B are placed in a simple, two-party call.	The PONW key lamp goes dark.
If Set B disconnects...	Set C is disconnected. The warning tone is removed. Set B rings.	The PONW lamp goes dark.

Post-dial operation for analog (500/2500 type) telephones

Table 26 shows the post-dial network break-in operation for analog (500/2500 type) telephone.

Table 26
Post-dial network break-in operation for an analog (500/2500 type) telephone

Actions	Response
Sets B and C are involved in a two-party call.	—
Set A dials Set B.	Set A receives a busy tone.
Set A presses the Flash key and dials the PONW FFC code.	Set A enters into a Conference with Sets B and C. If configured, a warning tone is provided to all three parties.
If Set C disconnects	Sets A and B are placed in a simple, two-party call. The warning tone is removed.
If Set B disconnects	Set C is disconnected. The warning tone is removed. Set B rings.

Pre-dial operation for analog (500/2500 type) telephones

Table 27 shows the post-dial network break-in operation for analog (500/2500 type) telephones.

Table 27
Pre-dial network break-in operation for an analog (500/2500 type) telephone

Actions	Response
Sets B and C are involved in a two-party call.	—
Set A dials the PONW FFC and then Set B's DN.	Set A receives dial tone and then enters a conference with Sets A and B. If configured, a warning tone is provided to all three parties.
If Set C disconnects	The warning tone is removed. Sets A and B are placed in a simple, two-party call.
If Set B disconnects	Set C is disconnected. The warning tone is removed. Set B rings.

Network Force Disconnect operation

Post-dial network force disconnect operation for an Internet Telephone or a Meridian Digital Telephone

Table 28 shows the post-dial network force disconnect operation for an Internet Telephone or a Meridian Digital Telephone.

Table 28
Post-dial network force disconnect operation for an Internet Telephone or a Meridian Digital Telephone

Actions	Response	Set A PONW lamp status
Sets B and C are involved in a two-party call.	—	—
Set A dials Set B.	Set A receives a busy tone.	—
Set A presses the FDIS key.	If configured, a single warning tone is provided and Set C is disconnected. Sets A and B are placed in a simple, two-party call.	The FDIS key lamp remains lit during the single warning tone period. It goes dark when Set C is disconnected.
OR		
If Set A initiates a break-in operation first (either pre-dial or post-dial)	Set A enters into a conference with Sets B and C. If configured, warning tone is provided.	The PONW lamp is lit.
Set A presses the FDIS key.	Set C is disconnected and the warning tone is removed. Sets A and B are placed in a simple, two-party call.	The PONW lamp goes dark.

Pre-dial network force disconnect operation for an Internet Telephone or a Meridian Digital Telephone

Table 29 shows the pre-dial network force disconnect operation for an Internet Telephone or a Meridian Digital Telephone.

Table 29
Pre-dial network force disconnect operation for an Internet Telephone or a Meridian Digital Telephone

Actions	Response	Set A PONW lamp status
Sets B and C are involved in a two-party call.	—	—
Set A presses the DN key and then the FDIS key.	Set A receives dial tone.	The FDIS lamp flashes. This indicates the pre-dial mode.
Set A dials the DN of Set B.	If configured, a single warning tone is provided and Set C is disconnected. Sets A and B are placed in a simple, two-party call.	The FDIS lamp remains lit during the single warning tone period. It goes dark when Set C is disconnected.

Post-dial force disconnect operation for analog (500/2500 type) telephones

Table 30 shows the post-dial network force disconnect operation for an analog (500/2500 type) telephone.

Table 30
Post-dial network force disconnect operation for an analog (500/2500 type) telephone

Actions	Response
Sets B and C are involved in a two-party call.	—
Set A dials Set B.	Set A receives a busy tone.
Set A presses the Flash key and then dials the FDIS FFC code.	If configured, a single warning tone is provided and Set C is disconnected. Sets A and B are placed in a simple, two-party call.
OR	
If Set A initiates a break-in operation first (either predial or postdial)	Set A enters into a conference with Sets B and C. If configured, a warning tone is provided.
Set A presses the Flash key and then dials the FDIS FFC.	Set C is disconnected and the warning tone is removed. Sets A and B are placed in a simple, two-party call.

Pre-dial Network force disconnect operation for analog (500/2500 type) telephones

Table 31 shows the pre-dial network force disconnect operation for an analog (500/2500 type) telephone.

Table 31
Pre-dial network force disconnect operation for an analog (500/2500 type) telephone

Actions	Response
Sets B and C are involved in a two-party call.	—
Set A dials the FDIS FFC and then dials Set B's DN.	Set A receives a dial tone. If configured, a single warning tone is provided and Set C is disconnected. Sets A and B are placed in a simple, two-party call.

NI-2 B-channel Service Messaging

Contents

The following are the topics in this section:

Regional material statement 253
Feature Description 254
B-channel status categories 255
Message Event Triggers 256
Service message retransmission 257
Service message collision 257
Operating parameters 258
Feature interactions 259
Feature packaging 259
Feature implementation 260
Task summary list 260
Feature operation 260

Regional material statement

This feature is only available in North America. Contact your system supplier or your Nortel Networks representative to verify support of this product in your area.

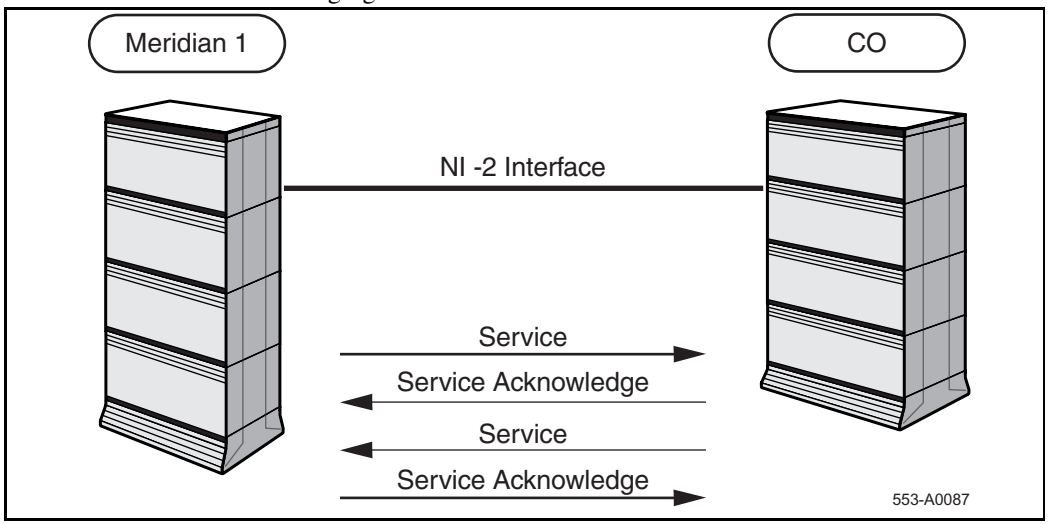
Feature Description

The NI-2 B-channel Service Messaging feature provides B-channel availability control on the NI-2 interface. With this feature, service messages communicate B-channel status changes to the far-end. This feature does the following:

- increases B-channel availability
- increases throughput on PRI service
- reduces line degradation
- reduces the number of lost calls
- minimizes the number of repeated calls on an out-of-service B-channel

When the status of a Meridian 1 B-channel changes, the Meridian 1 sends a service message to the Central Office (CO). The CO replies with a service acknowledgment and changes the status of the corresponding B-channel. When a CO sends a service message to a Meridian 1, the Meridian 1 acknowledges the service message and changes the B-channel status on the near-end. Figure 35 illustrates B-channel service messaging on the NI-2 interface.

Figure 35
NI-2 B-channel Service messaging



B-channel status categories

The following are the status categories associated with the NI-2 B-channel Service Messaging feature:

- IS - Indicates that the B-channel is in service and available for outgoing and incoming calls.
- OOS-FE - indicates that the far-end B-channel is out-of-service.
- OOS-NE - indicates that the near-end B-channel is out-of-service.

When a B-channel at the near-end goes out-of-service, the Meridian 1 sends a service message with OOS status to the far-end. The near-end B-channel status is OOS-NE. On receipt of this service message, the far-end changes the corresponding B-channel to OOS-FE.

When the near-end B-channel becomes available, the Meridian 1 sends a service message with IS status to the far-end. The near-end B-channel is temporarily placed in OOS-FE. On receipt of this service message, the far-end changes the channel status to IS and returns a service acknowledge message with the IS status to the Meridian 1. On receipt of this service acknowledge message, the near-end B-channel is placed in service.

The near-end status takes precedence over the far-end status. For example, if a near-end B-channel is in an OOS/NE state and receives an OOS request from the far-end, the final status is OOS/NE.

Table 32 lists the status scenarios when a message is received.

Table 32
Near-end status scenarios

Current Status (Near-end)	Status Received in Service Message	Final Status/ Status sent in Acknowledgement Message
OOS-NE	IS or OOS	OOS-NE/OOS
OOS-FE	IS	IS/IS
OOS-FE	OOS	OOS-FE/OOS
IS	OOS	OOS-FE/OOS
IS	IS	IS/IS

Message Event Triggers

IS trigger events

IS service messages are triggered when the following occur:

- The administrator enables the B-channel in LD 60 using the ENCH command.
- The status audit is triggered to resolve conflict between the status of the near-end and far-end of the channel. B-channels that are OOS receive either call clearing messages, channel negotiation messages, or requests for B-channel use.
- A new B-channel is provisioned and defaults to OOS-FE. The network side controls the initial service messaging requesting IS status on the user side of the B-channel.
- Alarm clear messages are received from the hardware

OOS trigger events

OOS service messages are triggered when the following occur:

- The administrator disables the channel from LD 60 using the DSCH command.
- The status audit is triggered to resolve conflict between the status of the near-end and far-end of the channel. B-channels that are OOS, receive either call clearing messages, channel negotiation messages or requests for B-channel use.
- An existing B-channel is removed from service.
- The administrator changes the channel ID in LD 14 using the MOV command.
- A PRI restart is sent or received for channels which are OOS.
- A channel is disabled for maintenance and an OOS message is sent.
- Alarm set messages are received from the hardware.
- A loop test is enabled in LD 60 for channels in a fault state.

Service message retransmission

Service messaging retransmits the message when an acknowledgment is not received within 120 seconds of the originating transmission. The number of retransmissions, up to a maximum of four, is configured in LD 17.

Service message collision

A message collision occurs when a service message is received between the time when a service message is sent and its corresponding service acknowledgement is received from the same B-channel. A re-transmission occurs after 120 seconds if an acknowledgment is not received. Table 33 lists the possible service message collision outcomes.

Table 33
Service collision outcome (Part 1 of 2)

Previous Near-end Status	Status Sent in Service Message	Colliding Status Received	Final Near-end Status
OOS-NE	IS	IS	IS
OOS-FE	IS	IS	IS

Table 33
Service collision outcome (Part 2 of 2)

Previous Near-end Status	Status Sent in Service Message	Colliding Status Received	Final Near-end Status
OOS-NE	IS	OOS	OOS-FE
OOS-FE	IS	OOS	OOS-FE
OOS-NE	OOS	IS	OOS-NE
OOS-FE	OOS	IS	OOS-NE
OOS-NE	OOS	OOS	OOS-NE
OOS-FE	OOS	OOS	OOS-NE
IS	IS	IS	IS
IS	IS	OOS	OOS-FE
IS	OOS	IS	OOS-NE
IS	OOS	OOS	OOS-NE

Operating parameters

The NI-2 B-channel Service Messaging feature operates on any Meridian 1 configured with a D-channel interface. The following PRI cards do not support the NI-2 B-channel Service Messaging feature:

- QPC757 Primary Rate Interface card
- NTAK93 D-Channel Handler Interface card

For the NI-2 B-channel Service Messaging feature, the far-end must support B-channel service messaging.

On an outgoing call, if the far-end triggers channel negotiation, an alternate channel is assigned. If the alternate B-channel has a near-end status of OOS-FE, the channel negotiation is accepted and the channel is placed in IS status. Otherwise, a Release Complete message is sent or a channel negotiation is triggered again.

When a setup message is received requesting an OOS channel, a Release Complete message is sent or a channel negotiation is performed. However, if the requested B-channel is OOS-FE, the status is changed to IS and the call is accepted.

With no existing call on the channel, B-channel Service messaging activates the B-channel to IS status. When there is a call on the B-channel, B-channel restart messaging is used.

The B-channel is placed in a lockout state when a restart message is sent. The lockout ends on receipt of a restart acknowledgement from the far-end. Calls cannot be placed on B-channels in the lockout state.

The identity of B-channels in the OOS-NE state are included in the PRI restart message.

To disable a PRI loop, corresponding D-channels are disabled. In this state, the B-channel service messaging is not active.

When a backup D-channel becomes active, the restart procedure is triggered. Service messages containing B-channel status information are sent to all far-end B-channels in the OOS state.

If a colliding service message is received, the T323 timer stops and the original message does not retransmit.

Feature interactions

There are no feature interactions associated with this feature.

Feature packaging

The NI-2 B-channel Service Messaging feature requires the following existing packages:

- ISDN Signaling (ISDN) package 145
- Primary Rate Access (PRA) package 146
- Multi-Serial Data Link (MSDL) package 222
- National Interface (NI-2) package 291

Feature implementation

Task summary list

The following is a summary of the tasks in this section:

1 LD 17 – Configure NI-2 B-channel Service Messaging.

LD 17 – Configure NI-2 B-channel Service Messaging.

Prompt	Response	Description
REQ	CHG	Change existing data.
TYPE	CFN	Configuration Record.
ADAN	NEW DCH xx	Add a primary D-channel where: xx = 0-63.
	CHG DCH xx	Change a primary D-channel where: xx = 0-63.
IFC	NI2	NI-2 TR-1268 interface type.
BSRV	YES	NI-2 B-channel Service Messaging enabled.
		NO = NI-2 B-channel Service Messaging disabled (default).
BSRC	1-(2)-4	NI-2 B-channel Retransmission Counter.

Feature operation

No specific operating procedures are required to use this feature.

NI-2 Name Display Supplementary Service

Contents

This section contains information on the following topics:

Regional material statement 261
Feature description 261
Operating parameters 263
Feature interactions 264
Feature packaging 268
Feature implementation 269
Feature operation 272

Regional material statement

This feature applies only to North America. Contact your system supplier or your Nortel Networks representative to verify support of this product in your area.

Feature description

Meridian 1 Release 25.40 software supports the NI-2 Name Display Supplementary Service (NDS). The NI-2 Name Display Supplementary Service extends the Meridian 1 capability to support name display on National ISDN-2 (NI-2) interfaces. This feature provides the following:

- calling name information on outgoing and incoming calls
- Connected/Alerting name information to incoming calls and from outgoing calls

The NDS feature retains the existing user interface for Meridian Customer Defined Network (MCDN) name display capabilities.

To enable this feature, configure each D-channel's remote capability as NDS. The calling name is sent in the SETUP message. The Connect/Alerting name is sent in the CONNECT/ALERT message.

The display of the name information at the far-end is controlled by the programming at the originating switch and the terminating switch. The status of the PI depends on how the Name Display Allowed/Name Display Denied (NAMA/NAMD) Class of Service is configured on the telephone at the near-end.

The presentation status from the near-end is overridden using the Calling Party Privacy (CPP) or Calling Party Privacy Override (CPPO) features.

The display on the far-end is determined by the Call Party Name Display Allowed (CNDA) or Call Party Name Display Denied (CNDD) Class of Service (CLS) configured on the far-end telephone.

Table 34 describes the presentation status of the originating node (the near-end) if Calling Party Privacy is not implemented.

Table 34
Presentation status of the originating node without Calling Party Privacy (CPP)

CLS	Presentation Indicator
NAMA	Presentation Allowed
NAMD	Presentation Denied

Table 35 describes the presentation status of the originating node (the near-end) with CPP per-line blocking Class of Service (CLS) implemented.

Table 35
Presentation status of the originating node with CPP per-line blocking CLS

CLS	Presentation Indicator
NAMA + Calling Party Number and Name Per-Line Blocking De-activated (CLBD)	Presentation Allowed
NAMA + Calling Party Number and Name Per-Line Blocking Activated (CLBA)	Presentation Denied
NAMD + CLBD	Presentation Denied
NAMD + CLBA	Presentation Denied

Table 36 describes the presentation status of the originating node (the near-end) with CPP per-line blocking Class of Service (CLS) and the dialed CPP Flexible Feature Code (FFC).

Table 36
Presentation status of the originating node with CPP per-line blocking CLS and FFC dialed

CLS	Presentation Indicator
NAMA + CLBA + CPPO FFC dialed	Presentation Allowed
NAMA + CLBD + CPPO FFC dialed	Presentation Allowed
NAMA + CLBD + CPP FFC dialed	Presentation Denied
NAMD + CLBA + CPPO FFC dialed	Presentation Allowed
NAMD + CLBA + CPP FFC dialed	Presentation Denied
NAMD + CLBD + CPPO FFC dialed	Presentation Allowed
NAMD + CLBD + CPP FFC dialed	Presentation Denied

Operating parameters

The NI-2 Name Display Supplementary Service complies with the GR-1367 Bellcore specifications for name delivery on PRI trunks.

The Name Display is not displayed on the far-end if this feature is not supported by the CO or PBX to which the far-end is connected.

With this feature, display names can be up to 15 characters long. Display names longer than 15 characters are truncated on the receiving telephone.

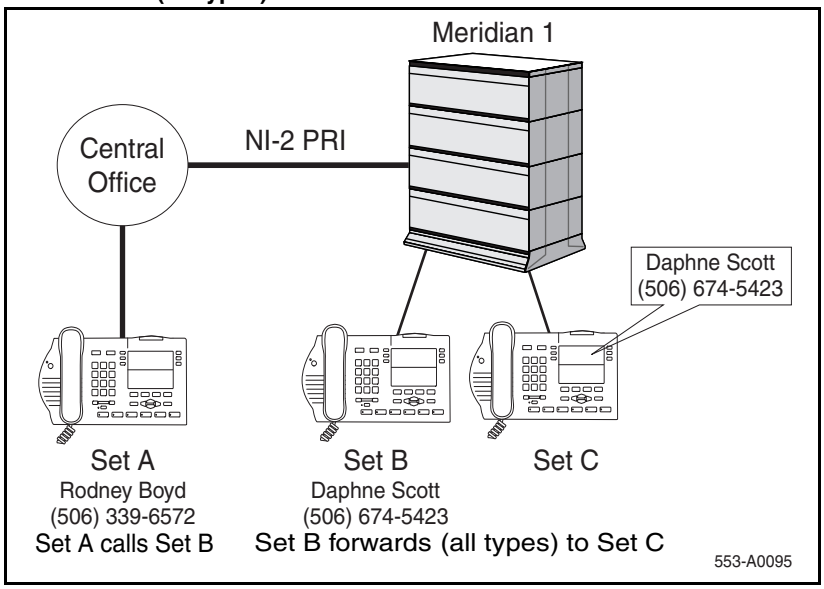
Calls with the Calling Party Privacy (CPP) Flexible Feature Code (FFC) override NDS.

Feature interactions

Call Forward (all types)

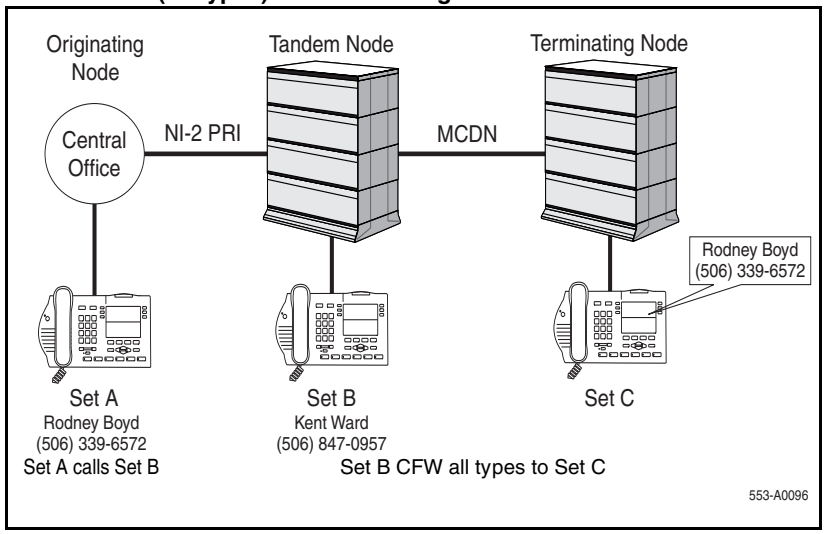
In a stand-alone environment, Set A calls Set B. The call is forwarded to Set C. Set C displays Set B's name information. See Figure 36.

Figure 36
Call Forward (all types) in a stand-alone environment



In a networking environment, Set C displays Set A's information. See Figure 37.

Figure 37
Call Forward (all types) in a networking environment



Call Hold

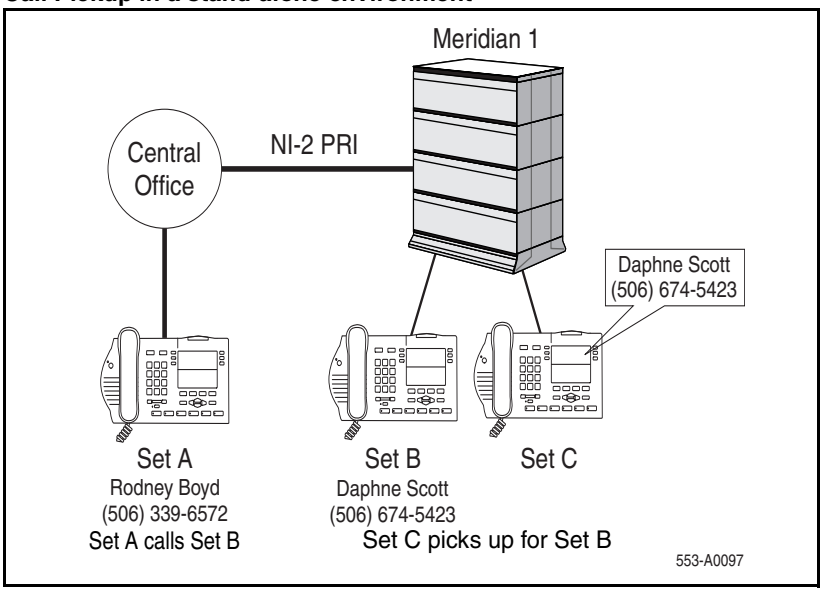
When an incoming call with Name Display Allowed is put on hold, the receiving telephone clears the name information from the display screen. When the call is re-established, the name information is re-displayed.

Call Pickup

Call Pickup Network Wide

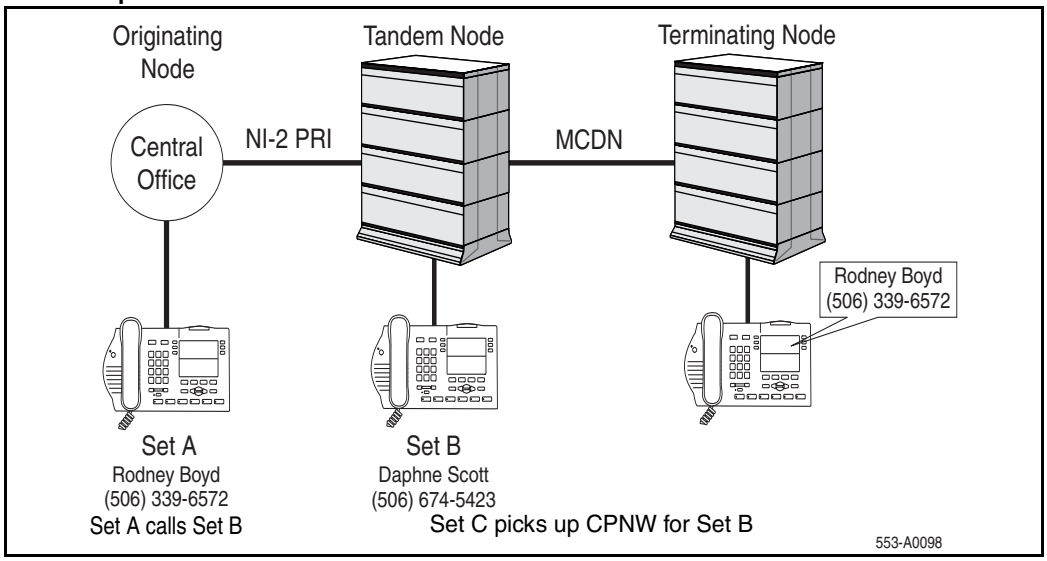
In a stand-alone environment, Set A calls Set B. Set C picks up the call for Set B. Set C displays Set B's name information. See Figure 38.

Figure 38
Call Pickup in a stand-alone environment



In a networking environment, Set C displays Set A's name information. See Figure 39.

Figure 39
Call Pickup Network Wide



Call Transfer

Set A calls Set B. Set B transfers the call to Set C. Set C displays Set A's name information. This applies to both stand-alone and networking environments.

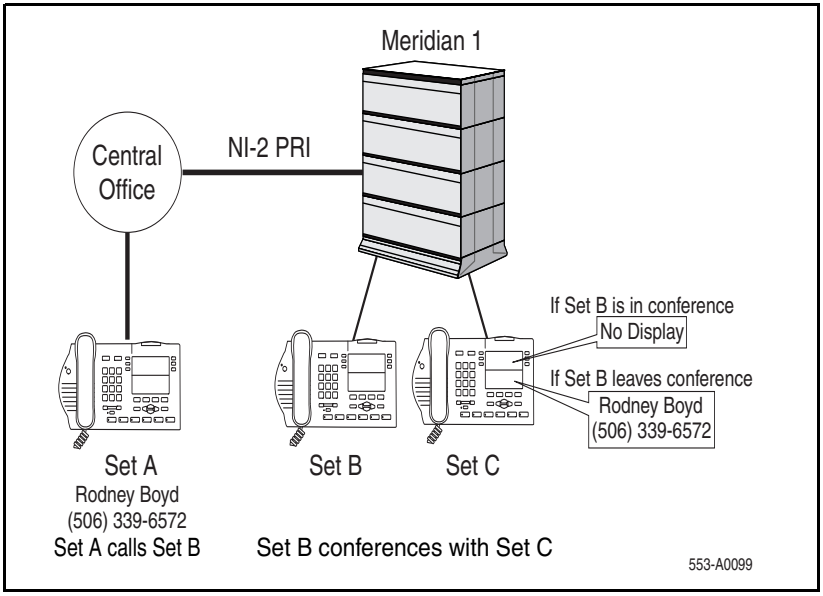
Calling Party Privacy

The Calling Party Privacy (CPP) feature overrides NDS.

Conference

Set A calls Set B. Set B conferences Set C. Set B and Set C clear the name information from the display screen. If Set B leaves the conference, Set A's name information displays on Set C. See Figure 40.

Figure 40
Conference call



Hunt

In a stand-alone environment, Set A calls Set B. The call is hunted to Set C. Set C displays Set B's name information.

In a networking environment, Set C displays Set A's name information.

Name Display for Dialed Number Identification Services

If DNAM = YES for incoming IDC routes, the DNIS number and name for Incoming Digit Conversion (IDC) DNIS NI-2 incoming calls is displayed instead of the calling name.

Feature packaging

The NI-2 Name Display Supplementary Service feature introduces the following package:

- NI-2 Name Display Service (NDS) package 385

This feature also requires the following existing packages:

- Call Party Name Display (CPND) package 95

- Integrated Services Digital Network (ISDN) package 145
- 1.5 Mbps Primary Rate Access (PRS) package 146
- Multi-purpose Serial Data Link (MSDL) package 222
- NI-2 TR-1268 Interface Basic Call Feature (NI-2) package 291
- Calling Party Privacy (CPP) package 301

Feature implementation

Task summary list

The following is a summary of the tasks in this section:

1 LD 17 – Configure the remote capability on the NI-2 PRI D-channel as Name Display Service (NDS).

2 LD 95 – Create a new Call Party Name Display (CPND) name string, if not already configured.

3 LD 10 – Allow NDS on analog (500/2500 type) telephones.

4 LD 11 – Allow NDS on Meridian 1 proprietary telephones.

5 LD 12 – Allow NDS on Attendant Console.

6 LD 57 – Define the Calling Party Privacy (CPP) Flexible Feature Code (FFC) for Analog (500/2500 type) and Meridian 1 proprietary telephones.

LD 17 – Configure the remote capability on the NI-2 PRI D-channel as Name Display Service (NDS).

Prompt	Response	Description
REQ	CHG	Change existing data.
TYPE	ADAN	Action Device and Number.
ADAN	CHG DCH xx	Change D-channel where: xx = 0 – 63.
....	....	
IFC	NI2	NI-2 TR-1268 Interface type.

Prompt	Response	Description
RCAP		Remote Capabilities.
	NDS	Implement NI-2 Name Display Service.
	XNDS	Remove NDS.

LD 95 – Create a new Call Party Name Display (CPND) name string, if not already configured.

Prompt	Response	Description
REQ	NEW	Add new data.
TYPE	NAME	Create a new name string.
CUST	xx	Customer number.
...		
DN	xxxx	Directory Number.
NAME	aaaa	Calling Party Name Display (CPND) name (maximum 15 characters).

LD 10 – Allow NDS on analog (500/2500 type) telephones.

Prompt	Response	Description
REQ:	CHG	Change existing data.
TYPE:	500/2500	Telephone type.
CUST	xx	Customer number.
...	...	
FTR	CPND	Allow CPND name assignment on this telephone (not required if CPND is enabled in LD 95).
CLS	(CNDD)	Called Party Name Display denied.
	CNDA	Called Party Name Display allowed (applies only to portable, personal telephones). Allowed if WRLS=Yes.
CLS	(NAMD)	Name Display Denied on the far-end.
	NAMA	Name Display Allowed on the far-end.

LD 11 – Allow NDS on Meridian 1 proprietary telephones.

Prompt	Response	Description
REQ:	NEW CHG	Add new data. Change existing data.
TYPE:	xxxx	Telephone type, where: xxxx = SL1, 2006, 2008, 2009, 2016, 2018, 2112, 2216, 2317, 2616 or 3000.
CUST	xx	Customer number.
...		
CLS	(CNDD)	Call Party Name Display denied on this telephone.
	CNDA	Call Party Name Display allowed on this telephone.
CLS	(NAMD)	Name Display denied on the far-end.
	NAMA	Name Display allowed on the far-end.

LD 12 – Allow NDS on Attendant Console.

Prompt	Response	Description
REQ	NEW	Add new data.
TYPE	xxxx	Console type where: xx = 1250 or 2250.
CUST	xx	Customer number.
....	....	
CPND	(CNDD)	Call Party Name Display denied.
	CNDA	Call Party Name Display allowed.

LD 57 – Define the Calling Party Privacy (CPP) Flexible Feature Code (FFC) for analog (500/2500 type) and Meridian 1 proprietary telephones.

Prompt	Response	Description
REQ	NEW CHG	Add new data. Change existing data.
TYPE	FFC	Flexible Feature Code.
CUST	xx	Customer number.
...	...	

CPP	xxxx	Calling Party Privacy FFC (typically *67). CPP is only prompted if the CPP package is equipped.
CPPO	xxxx	Calling Party Privacy Override. CPPO is only prompted if the CPP package is equipped.

Feature operation

No specific operating procedures are required to use this feature.

System Access Security

Contents

This section contains information on the following topics:

Controlling access to administration programs. 273
Password management 274
Recommended password management practices. 275
Program access control. 278
Audit Trail review. 279
History File review. 280
Controlling access to the system. 281
System administration port security. 281
Switchroom security. 281
Network facilities security. 282
Problem Determination Tool (PDT) access. 283
Controlling access to system Application Processors. 288

Controlling access to administration programs

Administration programs (overlays) are used to configure the customer database and conduct day-to-day routine system administration functions. Unauthorized access to these programs can make the system vulnerable to abuse and performance degradation or failure. For this reason, strict security must be implemented to help prevent unauthorized system access. This is accomplished with:

- Password management
- Program access control

- Audit Trail review
- History File review

Password management

Proper password selection and frequent password changes provide an important safeguard against unauthorized system access.

Two types of passwords allow access to database configuration and maintenance programs:

- level 1 passwords
- level 2 passwords

Use digits from 0 to 9 and alphabetic characters A through Z, to form a password. Passwords are case-sensitive.

Level 1 password

The administrator can use the level 1 password to log on to the PBX to change the configuration database. Level 1 passwords cannot change level 1 passwords, level 2 passwords or the secure data password associated with assigning Authorization Codes (Authcodes) and DISA parameters (if defined).

Table 37 lists the facility that can be implemented using a level 1 password, the programs and prompts to implement the password, and the programs to print information about the password.

Table 37
Implementing a level 1 password

Facility	Overlay and prompts	Print programs
Configuration	LD 17 - PWD2, NPW1	LD 22 by Passwords (must know level 2 PWD2-password)
	LD 17 - LNAME_OPTION LOGIN_NAME: 0-9, A-Z	LD 22 by AUDT

Level 2 password

The level 2 password provides all privileges of the level 1 password. It also allows the level 1 and level 2 passwords, as well as the secure data password, to be changed.

When accessing the system using a Limited Access Password, the Limited Access to Overlays feature can be configured to require a user name to be entered with up to 11 alphanumeric characters. The user name can only be configured by the administrator using the level 2 password.

Table 38 lists the facility that can be implemented using a level 2 password, the programs and prompts to implement the password, and the programs to print information about the password.

Table 38
Implementing a level 2 Password

Facility	Overlay and prompts	Print programs
Configuration	LD 17 - PWD2, NPW2	LD 22 by Passwords (must know level 2 PWD2-password)
	LD 17 - LNAME_OPTION: LOGIN_NAME: 0-9 A-Z	LD 22 by AUDT

Recommended password management practices

Nortel Networks recommends that the following password management practices be used to avoid or minimize unauthorized access to the administration terminal:

- Avoid simple passwords or those that are derived from personal information such as social security number, home telephone number, birth dates, and family names.
- Change the password every 60 to 90 days.
- Change a password several times (a minimum of five times) before repeating a previously used password.
- system passwords must be a minimum of eight characters in length and alphanumeric. A longer password provides greater security.

- The password must be changed during installation and again at system cutover.
- Invalid log-in thresholds must be set to 3; manual initialization will override the lock-out time limit defined for invalid attempts. This must be programmed. The default = NO.
- Change the system password when anyone knowing a system password leaves the company.

Single Terminal Access

The Single Terminal Access (STA) feature reduces the number of physical devices needed to administer and maintain a system and its associated subsystems.

When the user intends to switch to another system, a mechanism for ending the original session is provided in the STA application through a user-determined log-out sequence. This sequence is specified in the database with each STA port. This sequence is automatically be sent to the destination system by the application to prevent users from leaving a session open in the background without logging out.

If the log-out sequence is not programmed, or is programmed incorrectly, the user could leave a program open in the background, and the system could be subject to unauthorized access.

The STA master terminal will use the configured log-out sequences to automatically exit from the active and existing background sessions when the modem connection for the terminal experiences carrier drops out.

A password is required before the user can enter NEW or CHANGE to configure an STA port. This process is designed to protect the STA port from unauthorized alteration.

Table 39 lists the facility that can be implemented to configure STA, the programs and prompts to implement single terminal access, and the programs to print information about single terminal access.

Table 39
Implementing single terminal access

Facility	Overlay and prompts	Print programs
Configuration	LD 17 - ADAN, STA, TTY, CTYP, GRP, DNUM, ADMIN_PORT, LANGUAGE, ADDITIONAL_PORT	LD 22 by CFN or ADAN

Multiuser log-in

Multiuser log-in allows up to five users to simultaneously log into a system PBX to load and execute overlays. A sixth overlay can be running at midnight or in the background. This feature supports only the following:

- sets administration
- maintenance
- midnight routines
- background routines
- attendant administration

The History File includes separate Log Files for each configured TTY port to record each technician's maintenance and administration activities.

A user can be forced to log off a terminal if a level 2 or Limited Access Password user logs in to the PBX. A monitor command allows a logged in user to monitor the input/output activities of a different local or remote terminal.

Table 40 lists the facility that can be implemented using a level 2 password and multiuser log-in, the programs and prompts to implement the password, and the programs to print information about the password.

Table 40
Implementing level 2 password and multiuser log-in

Facility	Overlay and prompts	Print programs
Configuration	LD 17 - PWD2, LAPW, TLOG, SIZE MULTI-USER ON(OFF)	LD 22 by CFN or LAPW LD22 by CFN or LAPW

Program access control

The Limited Access to Overlays feature, controlled through Limited Access Password (LAPW), provides a greater degree of control of password assignment and program access. It also enhances tracking of PBX access. This feature provides additional security by allowing up to 100 LAPW passwords to be defined per system. The LAPW passwords can be 4 to 16 alphanumeric characters in length.

In addition to the log-in time, name, and password, the LAPW Audit Trail provides a time stamp indicating when the user logged out. When accessing the system using LAPW, the Limited Access to Overlays feature can be configured to require a user to enter a user name with up to 11 alphanumeric characters.

Access to specific programs can be defined for each password and a Print Only capability specified. An Audit Trail can be configured to record the date, time, password used, and programs accessed. The system performs the following actions:

- monitors failed log-on attempts
- compares the number of attempts with a predefined threshold
- locks the entry port if the threshold is exceeded

The system reports lock-out conditions on all terminals and provides a special report to the next administrator who logs on.

Table 41 lists the facility that can be implemented using Limited Access to Overlays programs, the prompts used to implement the feature, and the programs to print information about the feature.

Table 41
Implementing the Limited Access to Overlays feature

Facility	Overlay and prompts	Print programs
Configuration	LD 17 - LAPW, PWnn, OVLA, CUST, TEN, OPT = CFPD(A), LLCA(D), PROA(D), PSCD(A), HOST, FLTH, LOCK, AUDT, SIZE, INIT	LD 22 by CFN or LAPW

Audit Trail review

The Audit Trail stores system activities messages in memory. The stored information can be accessed using a system terminal or a remote device. The information can be printed.

Make sure that the file is large enough to hold all possible entries. Increase the size if necessary.

INIT = YES indicates that a manual initialization is allowed to reset a port locked out due to invalid log-on attempts. If ACD reports are run, this INIT feature will interrupt reports and provide incomplete statistics.

The Audit Trail for Limited Access Password (LAPWs) includes time stamps that indicate when users logged out.

Table 42 lists the facility, shows the program and prompts used to implement the Audit Trail feature, and the program used to print information about the feature.

Table 42
Implementing the Audit Trail

Facility	Overlay and prompts	Print programs
Configuration	LD 17 - AUDT, SIZE, INIT	LD 22 by AUDT or LD 22 by CFN

History File review

The History File stores system messages in memory. The stored information is accessed by using a system terminal or a remote device. The information can be printed.

Specify the types of information to be stored in the History File. This information includes the following:

- maintenance messages (MTC),
- service change activity (SCH),
- customer service change activity (CSC), and
- software error messages (BUG).

Selectively view the History File using the VHST command. This command permits the following actions:

- search forward
- repeat the last search
- go up or down
- define the next or previous number of lines to display
- display lines from the current location to the bottom of the file
- search on a string of up to 12 characters

A Traffic Log file can be created separate from the History File.

Table 43 lists facilities that can be implemented using the History File, programs and prompts to implement the feature, and programs to print information about the feature.

Table 43
Implementing the History File

Facility	Overlay and prompts	Print programs
Configuration	LD 17 - IOTB, HIST, USER ADAN SIZE	LD 22 CFN or ADAN

Controlling access to the system

To limit unauthorized functional and physical access to the system and its network connections, provide the following:

- System administration port security
- Switchroom security
- Network facilities security
- Problem Determination Tool (PDT) access

System administration port security

Remote system administration allows PBX technicians to access the system using maintenance modems or the on-site terminal. This allows them to adjust and troubleshoot system hardware and software components. however, unauthorized users can also access the system remotely, alter the system configuration, steal services, and degrade system performance.

Unauthorized users have been known to dial into the remote access port, break the password, and reprogram system memory to allow international calls, enable the DISA feature, turn off Call Detail Recording (CDR), traffic, and history reports, and either eliminate the need for Authcodes or create new ones.

Ports defined as TTY or PRT are controlled by counters monitoring invalid characters. Ports disabled due to invalid characters can be automatically enabled after 4 minutes. Disabled ports can be enabled a maximum of three times in 30 minutes. If a port is disabled four times in 30 minutes, it requires manual enabling.

Access to the system communication ports can be limited with passwords. Refer to “Password management” on page 274.

Switchroom security

If a switchroom is not secure, this permits access by unauthorized users to all the system resources. Their activities can range from turning off printer and CDR processors to removing cards from the PBX and rendering the system inoperable. Follow these security procedures to minimize this risk:

- Limit access to the switchroom to authorized personnel only.

- Require distributor and telephone company personnel to sign in and out and provide identification, if necessary.
- Control, document, and audit major changes to system configuration.
- Require personnel to sign out parts and equipment.
- Store printouts of system configurations and databases in a secure, locked area.
- Do not post passwords or Trunk Access Codes in the switchroom.
- Keep the switchroom and telephone equipment closets locked.

Network facilities security

Network security is just as important as switchroom security. For example, unsecured facilities can be accessed by a lineman using a test terminal to place unauthorized calls without these calls being detected by the PBX and recorded by the CDR.

Follow these security procedures to minimize this risk of abuse:

- Secure the telephone company access point, individual distribution frame location, and the Main Distribution Frame (MDF).
- Avoid locating Intermediate Distribution Frames (IDF) in janitorial, electrical, and supply closets whenever possible. Limit access when colocation is unavoidable.
- Document existing outside and inside cable plans and update these records as service changes are made.
- Where cable plan records do not exist, consider hiring an independent consultant to verify and document the cable plan.
- Maintain and document all moves and changes Eliminate all out-of-service cross connects if not using the Automatic Set Relocation feature.
- Encase and lock building entry terminals and secure manholes.
- Avoid posting cable documentation in the IDF.
- Keep cable plant documentation in at least two separate secure locations.

- Verify terminal connections against cable plant/system records, and resolve all differences.
- Audit the entire system, ensuring that all cable, telephone company, telephone, and PBX records are accurate.

Problem Determination Tool (PDT) access

Problem Determination Tool (PDT) access is password protected. Level 2 PDT users, usually administrators, can change level 1 and level 2 PDT passwords.

For a new system installation and for an upgrade, the system level 1 and 2 passwords are hard coded from previous issues of the software.

For previous issues of software, passwords could be changed by using patch MPLR13326. For an upgrade, if the password was changed previously, it does not need to be changed for Release 25.40; the password only needs to be reset.

To change the level 1 and 2 passwords for a new system installation, or to upgrade from a previous issue of software where the level 1 and 2 passwords were NOT changed previously:

- Follow the steps in “Changing the password” on page 284.
- After the password has been changed, follow the steps in “Resetting the Passwords” on page 285.

To reset a forgotten password, or to upgrade from previous issue of software where the level 1 and 2 passwords were changed previously:

- Follow the steps in “Resetting the Passwords” on page 285.

CAUTION

As soon as the temporary password is no longer required, remove the install disk or return faceplate switches to the original position. If a reboot or INI occurs while the system is in the temporary password condition, large switches may come up in install mode or Option 11 may come up in an error state.

If this occurs, remove the install disk or reset the faceplate switches to the original position and follow with an INI.

Changing the password

For CPP machines

Passwords can only be changed on the active side when the system is joined. If the system is split, the passwords on either side can be changed. However, when the system is joined, the active side will overwrite the inactive side PDT passwords with the active side PDT passwords.

For Option 11C machines with IP Expansion

The PDT passwords can only be modified on the main cabinet. All expansion cabinets will use the main cabinet's PDT passwords.

Use the following procedure to change one or both of the PDT passwords.

Procedure 29
Change one or both PDT passwords

1. Enter PDT using the current level 2 password.
2. At the pdt prompt, type ***passwd***.
3. Enter the current level 2 password when prompted.

4 Enter the new level 2 and level 1 PDT passwords when prompted. PDT passwords are case sensitive, must be 6 to 16 characters long, and the level 1 and 2 passwords must be different.

To accept a password without changing it, press the <enter> key when prompted to enter a new password.

5 Exit PDT.

6 Verify the passwords by entering PDT with the current passwords.

———————— *End of Procedure* ————————

Resetting the Passwords

On the large system, an install disk must be placed in the floppy drive. The On a 68000 series system, either drive can be used. On a CP PII system, only the drive on the active side can be used.

For Option 11C, the faceplate dip switch is used. Turn on the switch that corresponds to the next baud rate lower than it is currently set to and do not turn off the current switch. The two switches directly beside each other on the faceplate will be on.

Ensure that only two switches are on at any one time. Having three switches or more will cause an invalid condition and it will not be possible to communicate with the switch.

After the disk is inserted, or the dip switch is turned on, use the following procedure to reset the password.

Procedure 30
Reset the password

1 Enter PDT using the site id as the password. For Option 11C, use the security id as the password.

2 At the PDT prompt, type ***passwd***.

3 When prompted for the current level 2 password, enter the tape id. For Option 11C, enter the security id. PDT passwords are case sensitive, must be 6 to 16 characters long, and the level 1 and 2 passwords must be different.

To accept a password without changing it, press the <enter> key when prompted to enter a new password.

4 Enter the new level 2 and level 1 PDT passwords when prompted.

5 Remove the disk or power down the switch.

6 Exit PDT.

7 Verify the passwords by entering PDT with the current passwords.

End of Procedure

Table 44
System Report messages for PDT (Part 1 of 3)

Report	Description / Action required	Severity
SRPT0051	PDT: PDT passwords set to default	Info
SRPT0052	PDT: Could not create PDT password file Try resetting the PDT passwords using the PASSWD command. If the PASSWD command fails or cannot be executed then: • For an Option 11C, enable the magic switch. Enter PDT using the systems SECURITY ID. Enter the PASSWD command and use the SECURITY ID as the Old PDT level 2 Password. • For all other systems, enter the install disk in the floppy drive of the active core. Enter PDT using the systems TAPE ID. Enter the PASSWD command and use the TAPE ID as the Old PDT level 2 Password. If this fails contact the system technical support group.	Minor

Table 44
System Report messages for PDT (Part 2 of 3)

Report	Description / Action required	Severity
SRPT0053	PDT: Could not save PDT passwords Try resetting the PDT passwords using the PASSWD command. If the PASSWD command fails or cannot be executed then: • For an Option 11C, enable the magic switch. Enter PDT using the systems SECURITY ID. Enter the PASSWD command and use the SECURITY ID as the Old PDT level 2 Password. • For all other systems, enter the install disk in the floppy drive of the active core. Enter PDT using the systems TAPE ID. Enter the PASSWD command and use the TAPE ID as the Old PDT level 2 Password. If this fails contact the system technical support group.	Minor
SRPT0054	PDT: Passwords cannot be changed from a remote cabinet	Info
SRPT0055	PDT: Password changes have been stored	Info
SRPT0056	PDT: Passwords can only be changed from the active side Check the core state using LD 135 stat CPU. Ensure the core is the active core. Try to change the passwords using the PASSWD command again. If this fails contact the system technical support group.	Info
SRPT0057	PDT: Problem detected with password synchronize • For an Option 11C: check the connection between the main cabinet and the remote cabinets. Ensure that the main cabinet and remote cabinets have completed their boot cycle. Try to change the passwords using the PASSWD command again. • For 68000 series systems, check that both cores are available, are synchronized and are joined. Try to change the passwords using the PASSWD command again. • For CP PII systems, check that the HSP is up, the systems are joined and the disks are synchronized. Try to change the passwords using the PASSWD command. If these actions fail, contact the system technical support group.	Minor

Table 44
System Report messages for PDT (Part 3 of 3)

Report	Description / Action required	Severity
SRPT0058	PDT: Corrupt password detected Try resetting the PDT passwords using the PASSWD command. If the PASSWD command fails or cannot be executed then: • For an Option 11C enable the magic switch. Enter PDT using the systems SECURITY ID. Enter the PASSWD command and use the SECURITY ID as the Old PDT level 2 Password. • For all other systems, enter the install disk in the floppy drive of the active core. Enter PDT using the systems TAPE ID. Enter the PASSWD command and use the TAPE ID as the Old PDT level 2 Password. If these actions fail, contact the system technical support group.	Minor
SRPT0059	PDT: Invalid password entered	Info
SRPT0060	PDT: Unexpected error occurred during PDT password changes Try to change the passwords using the PASSWD command. If the PASSWD command fails or cannot be executed then: • For an Option 11C enable the magic switch. Enter PDT using the systems SECURITY ID. Enter the PASSWD command and use the SECURITY ID as the Old PDT level 2 Password. • For all other systems, enter the install disk in the floppy drive of the active core. Enter PDT using the systems TAPE ID. Enter the PASSWD command and use the TAPE ID as the Old PDT level 2 Password. If these actions fail, contact the system technical support group.	Minor

Controlling access to system Application Processors

Restrict access to Application Processors by requiring a user to enter a valid user ID and password on the Application Processor console. The user can then access and run applications, or configure operating characteristics of the Application Processor.

System access privileges are based on user IDs that are password protected. Application Processors are Unix System V based self-contained modules that interface with the system. They can also interface to local and remote peripheral devices such as terminals, personal computers, and printers. Access is restricted by the user ID, not by the terminal. A user can log on with a user ID from any terminal, including the system console.

These UNIX-based Application Processors use a hierarchy of four basic user identifications, where number 1 is the highest and number 4 is the lowest. These user IDs are as follows:

- **root**
  First-level user ID used by authorized engineering and development personnel only. The **root** user ID is set during the application installation and is chosen based on the ID of the system to which it is connected. The **root** ID is different for each application.

- **disttech**
  Second-level user ID used by qualified field technicians, emergency technical assistance and service, and distributors to configure the Application Processor according to the customer applications requirements. This is also the second-level default password. The administrator must change this password when the system is first placed in service.

- **maint** or **mlusr**
  Third-level user IDs used by the customer application and maintenance administrator to install, modify, and remove applications running on the Application Processor. These are also the third-level default passwords.

- **mlusr** and **ccrusr**
  Application access user IDs and fourth-level user IDs used by the application user to access the Application Processor console, local or remote terminals, and personal computers to run applications. These are also the fourth-level default passwords. **ccrusr** is present only if CCR is installed**.**

To protect the Application Processor facilities from unauthorized access, adopt the following password management practices:

- avoid simple passwords or those that are derived from personal information such as social security number, home telephone number, birth dates, and so on.
- change passwords every 60 to 90 days.
- Change a password several times (a minimum of five) before a previously used password can be repeated.
- Use passwords at least eight characters in length and make them alphanumeric.
- The password must be changed at system cutover.
- Change the password immediately when anyone knowing the password leaves the company.

QSIG Message Waiting Indication Supplementary Service

Contents

The following are the topics in this section:

Feature description 291
Operating parameters 294
Feature interactions 295
Feature packaging 295
Feature implementation 295
Task summary list 295
Feature operation 297

Feature description

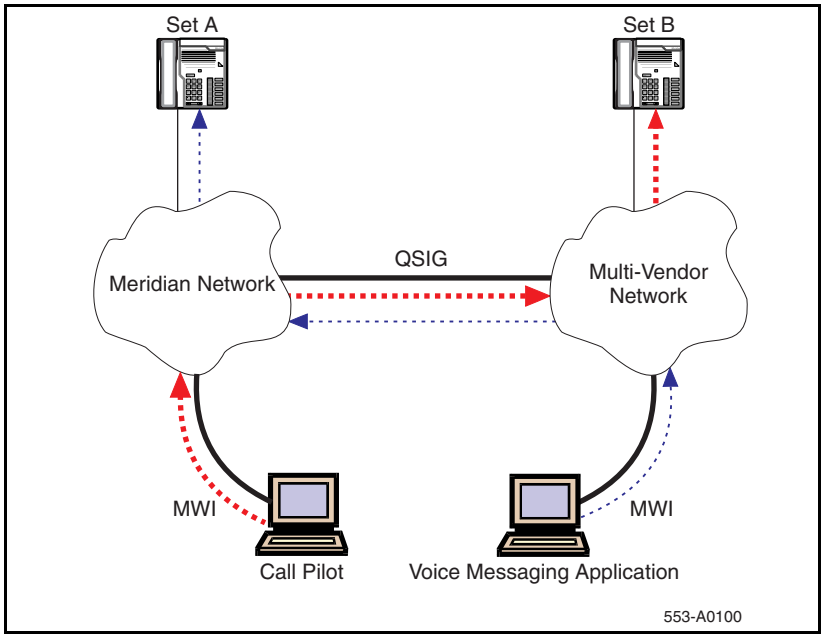
Meridian 1 Release 25.40 introduces the QSIG Message Waiting Indication Supplementary Service (QSIG MWI SS) feature. QSIG MWI SS allows the transport of an MWI message between Meridian networks and multi-vendor networks, using the industry standard QSIG protocol.

With this feature, the user receives an MWI appropriate for their system when they have at least one new VoiceMail message. On the user's telephone, the red LED is lit, the Message Waiting key lamp flashes or a stutter tone is heard to indicate a new VoiceMail message. When the user retrieves the message, the MWI is deactivated.

The MWI is transported in the following manner:

1 A Meridian Message Center (for example, CallPilot) sends an MWI message to the Meridian Message Center Private Integrated Services Network Exchange (PINX) that an unheard VoiceMail message exists for a user. The user is located in a different multi-vendor Private Integrated Services Network (PISN). See Figure 41.

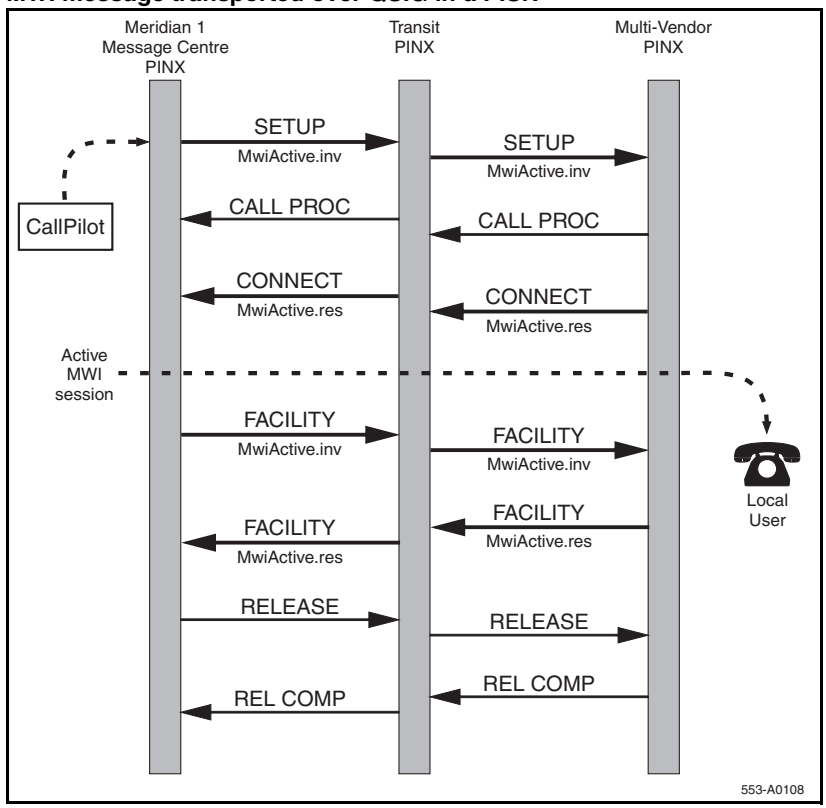
Figure 41
MWI message transported between a Meridian network and a multi-vendor network



2 The Message Center PINX sets up a connection to the multi-vendor Message Center PINX, possibly through one or more transit PINXs.

3 At the MCDN-QSIG gateway of the Meridian network, the MWI message is translated to a QSIG MWI GF Facility message and transported over QSIG to the multi-vendor PINX. See Figure 42.

Figure 42
MWI message transported over QSIG in a PISN



4 The multi-vendor's PINX notifies its Message Center that there is an MWI message for a local user.

5 That Message Center activates the local user's VoiceMail message MWI. When the VoiceMail message has been heard, the MWI is de-activated.

For example, if the Meridian network CallPilot receives an MWI message from Set A for a user in a multi-vendor network (Set B), the MCDN-QSIG gateway software sends a MWI GF Facility message telling Set B that there is a new VoiceMail message in their VoiceMail box.

If the foreign network's voice messaging application sends an MWI message from Set B to Set A, the MCDN-QSIG gateway software receives the MWI GF Facility message. The Meridian software interprets the message and performs the same actions as if the MWI message had been received from the local CallPilot. The Meridian 1 software activates Set A's Message Waiting Indication key LED.

When an MWI message is received for a DN assigned to multiple telephones, the Message Waiting Indication is activated on each of the telephones.When all new messages are heard, the Meridian 1 cancels the MWI on all sets.

QSIG-MCDN Gateways

QSIG MWI Facility messages at QSIG-MCDN Gateway nodes are translated to MCDN MWI Facility messages. MCDN MWI Facility messages at QSIG-MCDN Gateway nodes are translated to QSIG MWI Facility messages.

Operating parameters

The QSIG Message Waiting Indication Supplementary Service feature supports all Meridian telephones that support Message Waiting Indication.

QSIG MWI SS requires a Coordinated Dialing Plan (CDP) or a Uniform Dialing Plan (UDP) between the networks using QSIG MWI SS.

ESIG and ISIG networks do not support QSIG MWI SS.

QSIG MWI SS does not support the Remote Call Sender feature.

The QSIG MWI SS feature does not support the QSIG-DPNSS Gateway.

The QSIG-MCDN interface does not support the transport of the MWI Interrogate facility message; however, it tandems MWI Interrogate facility messages to other multi-vendor switches that do support it.

On any Meridian 1 sytem, either the Server User node or the Message Center node must have the QSIG Supplementary Services (QSIG-SS) package 316 equipped in order to use the MWI service.

Feature interactions

Meridian End-to-End Transparency

The Meridian 1 system sends the proprietary QSIG MWI message between Meridian switches over a QSIG interface, using Meridian End-to-End Transparency (MEET). MEET requires a Remote Capability (RCAP) of MCDN QSIG Conversion as a Remote Capability (MQC) on the D-channel.

The QSIG MWI SS sends the QSIG MWI message between Meridian switches and multi-vendor switches, using the industry-standard QSIG protocol. QSIG MWI SS requires a RCAP of QSIG Message Waiting Indication using Integer Value (QMWI) or QSIG Message Waiting Indication using Object Identifier (QMWO).

Remove RCAP MQC, if implemented on a D-channel, before implementing RCAP QMWI/QMWO.

Feature packaging

QSIG Message Waiting Indication Supplementary Service (QSIG MWI SS) is included in QSIG Supplementary Services (QSIG-SS) package 316.

Feature implementation

Task summary list

The following is a summary of the tasks in this section:

1 LD 15 – Configure a PINX DN for the customer.

2 LD 16 – Configure QSIG MWI for QSIG BRI trunks.

3 LD 17 – Configure QSIG MWI for PRI trunks.

LD 15 – Configure a PINX DN for the customer.

Prompt	Response	Description
REQ:	CHG	Change existing data.
TYPE:	NET	Networking data.

CUST	xx	Customer number.
PINX_DN	xx....x	Private Integrated Services Network Exchange DN Node DN (up to seven digits).

LD 16 – Configure QSIG MWI for QSIG BRI trunks.

Prompt	Response	Description
REQ	NEW CHG	Add new data. Change existing data.
TYPE	RDB	Route Data Block.
...	...	
DTRK	YES	Digital Trunk Route.
DGTP	BRI	Basic Rate Interface (BRI) Digital Trunk Type.
...	...	
IFC		Interface type for this route.
	ESGF ISGF EGF4	ESIG interface with GF platform. ISIG interface with GF platform. Q Reference Signaling Point interface.
...	...	
RCAP		Remote Capabilities.
	QMWI	Add Message Waiting Indication as a remote capability. The encoding method uses Integer Value.
	QMWO	Add Message Waiting Indication as a remote capability. The encoding method uses Object Identifier. Do not configure QMWI and QMWO on the same link at the same time. XQMW = Remove Message Waiting Indication as a remote capability.

LD 17 – Configure QSIG MWI for PRI trunks.

Prompt	Response	Description
REQ	CHG	Change existing data.
TYPE	ADAN	Action Device and Number.
ADAN	NEW DCH xx CHG DCH xx	New D-channel number. Change D-channel number where: xx = 0 – 63.
...	...	
IFC		Interface type for this route.
	ESGF ISGF EGF4	ESIG interface with GF platform. ISIG interface with GF platform. Q Reference Signaling Point interface.
RCAP		Remote Capabilities.
	QMWI	Add Message Waiting Indication as a remote capability. The encoding method uses Integer Value.
	QMWO	Add Message Waiting Indication as a remote capability. The encoding method uses Object Identifier.
		Do not configure QMWI and QMWO on the same link at the same time.

Feature operation

No specific operating procedures are required to use this feature.

Redirecting Name Display Enhancement for QSIG Call Rerouting

Contents

Feature description 299
Operating parameters 299
Feature interactions 300
Feature packaging 300
Feature implementation 300

Feature description

Dialed Name Display Allowed and Dialed Name Display Denied (DNDA/DNDD) functionality is now supported for Call Rerouting when both the originating and the diverted-to user are on the same node.

Call Diversion notification provides, for QSIG generic functional protocol (GF) interfaces, the capability of displaying the diverted-to user's calling line identification (CLID) on the calling user's telephone when the diverted-to user's telephone is rung during QSIG call diversion.

When both the originating and the diverted-to user are on the same Meridian 1 node and call diversion is performed by the Rerouting method, the originating user’s subscription options have no impact on the diverted-to user’s notification. If the diverted-to user has CLS DNDA, then the diverted-to telephone displays the redirecting name.

Operating parameters

There are no operating parameters associated with this feature.

Feature interactions

There are no feature interactions associated with this feature.

Feature packaging

The Redirecting Name Display Enhancement for QSIG Call Rerouting feature does not introduce any new packages.

This feature requires the following existing packages:

- Q Reference Signalling Point Interface (QSIG) package 263
- QSIG Generic Functional protocol (QsigGF) package 305
- Integrated Services Digital Network (ISDN) package 145
- Multi-purpose Serial Data Link (MSDL) package 222
- Basic Rate Interface (BRI) package 216
- ISDN BRI Trunk Access (BRIT) package 233
- BRI Line Application (BRIL) package 235
- 2 Mb/s Primary Rate Interface (PRI2) package 154
- QSIG Supplementary Service (QSIG-SS) package 316
- International Primary Rate Access (IPRA) package 202
- Call Party Name Display (CPND) package 95

Feature implementation

There are no specific implementation procedures for this feature.

SDID Number as CLID for EuroISDN Trunks

Contents

The following are the topics in this section:

Regional material statement 301
Feature description 301
Type Of Number of Calling Party Number 302
Connected Number Identification 303
Operating parameters 303
Feature interactions 303
Feature packaging 304
Feature implementation 304
Feature operation 306

Regional material statement

The information presented in this section does not pertain to all market regions. Contact your system supplier or your Nortel Networks representative to verify support of this product in your area.

Feature description

Meridian 1 Release 25.40 software introduces the SDID number as CLID for EuroISDN Trunks feature.

SDID capability is available for EuroISDN calls that have CLID OPT1 enabled. For BRIE interfaces, the OPT1 option is configured at the CLID prompt in Overlay 16. For PRI2 interfaces, the OPT1 option is configured at the CLID prompt in Overlay 17.

The Send DID Number (SDID) feature sends the Direct Inward Dial (DID) number of a specific DN as Calling Line Identification (CLID) on an outgoing trunk call. SDID replaces the internal DN of the telephone with the DID (external DN) of the telephone. The DID number is obtained from the Incoming Digit Conversion (IDC) table.

The IDC table converts the following:

- the internal DN of the telephone to the external DN of the telephone
- the external DN of the telephone to the internal DN of the telephone

Table 45
Example of an IDC table

Incoming Digits (IDGT)	Converted Digits (CDGT)
4322 (external DN)	726 (internal DN)
8741 (external DN)	12 (internal DN)

Set A with an internal DN of 726 calls Set B. The IDC table converts Set A's internal DN 726 to its external DN 4322. The CLID of Set A is sent to Set B as 4322. If the internal DN is not entered in the IDC table, the internal DN is sent as the CLID.

Set C calls Set D by dialing Set D's external DN 8741. The IDC table converts Set D's external DN 8741 (external DN) to its internal DN 12. Set D's external DN is sent to Set C as the Connected Number (CONN).

Type Of Number of Calling Party Number

The SDID feature allows the Type of Number (TON) of the calling party number to be changed in the Route Data Block (RDB). The TON is changed when the calling party number has an ISDN numbering plan.

Connected Number Identification

The SDID DN (the external DN) is sent to the CO as the Connected Number for an incoming call.

Operating parameters

This feature is only available on EuroISDN routes.

The EuroISDN route must have an IDC table associated with it when SDID is enabled.

This feature replaces the internal DN with the DID DN for the following:

- analog (500/2500 type) telephones
- Meridian Digital telephones
- Basic Rate Interface (BRI) Line telephones
- Attendant Consoles

This feature does not apply to trunks as the originator.

Feature interactions

Automatic Call Distribution

The SDID number as CLID for EuroISDN trunks feature is not applicable to Automatic Call Distribution (ACD), as calls cannot originate from an ACD key.

If the ACD telephone is equipped with an active Single Call Ringing (SCR) key, the DN is obtained from the active key. If the DN has been entered in the IDC table, the external DID number is used. See “ISDN Calling Line Identification Enhancement”.

Business Networking Express

Even though the CLID is changed to the SDID DN, the private CLID or name is not changed.

Call Detail Recording

Call Detail Recording (CDR) is not affected by the SDID feature. The record’s Originating ID (ORIGID) and Terminating ID (TERID) remain as the internal DN.

Call Forward

If a forwarding DN on a EuroISDN trunk is used as CLID and is found in the IDC table, the SDID DN is sent as the CLID.

Calling Party Privacy

The Calling Party Privacy (CPP) feature is not affected by SDID.

Direct Inward System Access

Direct Inward System Access (DISA) numbers are not affected by the SDID feature.

EuroISDN Trunk – Network Side

The SDID number as CLID feature is supported on the network side of the EuroISDN trunk.

Feature packaging

The SDID number as CLID for EuroISDN trunks feature requires the following packages:

- Incoming Digit Conversion (IDC) package 113
- International Supplementary Features (SUPP) package 131
- Integrated Services Digital Network (ISDN) package 145

Feature implementation

LD 49 – Define the IDC table.

Prompt	Response	Description
REQ	NEW CHG	Add new data. Change existing data.
TYPE	IDC	Incoming Digit Conversion.
CUST	xx	Customer Number.
DCNO	0 – 254	Day IDC tree number.

FDID	(NO) YES	Flexible DID.
SDID	(NO) YES	Send DID number instead of internal DN.
IDGT	xxxx xxxx	Incoming Digit or range of digits where: xxxx = 0 – 9999.
xxxx	yyyy	Converted Digits (CDGT).
IDGT	xxxx xxxx	Incoming Digit or range of Digits where: xxxx = 0 – 9999.
xxxx	yyyy	Converted digits (CDGT).

LD 16 – Define the Route Data Block (RDB) for ISDN trunks.

Prompt	**Response**	**Description**
REQ	NEW CHG	Add new data. Change existing data.
TYPE	RDB	Type of data block = RDB (route data block).
ROUT	xxx	Route Number where: xxx = 0 – 511 (large systems) xxx = 0 – 127 (small systems).
....	....	
ISDN	(NO) YES	Integrated Services Digital Network option.
....	....	
- SDID	YES	Send DID number instead of internal DN. (NO) = default.

-- CTON	 (NCHG) UKWN INTL NATL LOCL	Call Type of Number. Call Type is not changed. Unknown Call Type. International Call Type. National Call Type. Subscriber Call Type.
....	....	
IDC	YES	Incoming DID Digit Conversion on this route.
- DCNO	xx	Day IDC tree number where: xx = (0) – 254.
- NDNO	xx	Night IDC tree number where: xx = 0 – 254.

Feature operation

No specific operating procedures are required to use this feature.

Singapore ISDN Restart Message Enhancement

Contents

This section contains information on the following topics:

Feature description 307
Operating parameters 308
Feature interactions 308
Feature packaging 308
Feature implementation 308
Feature operation 308

Feature description

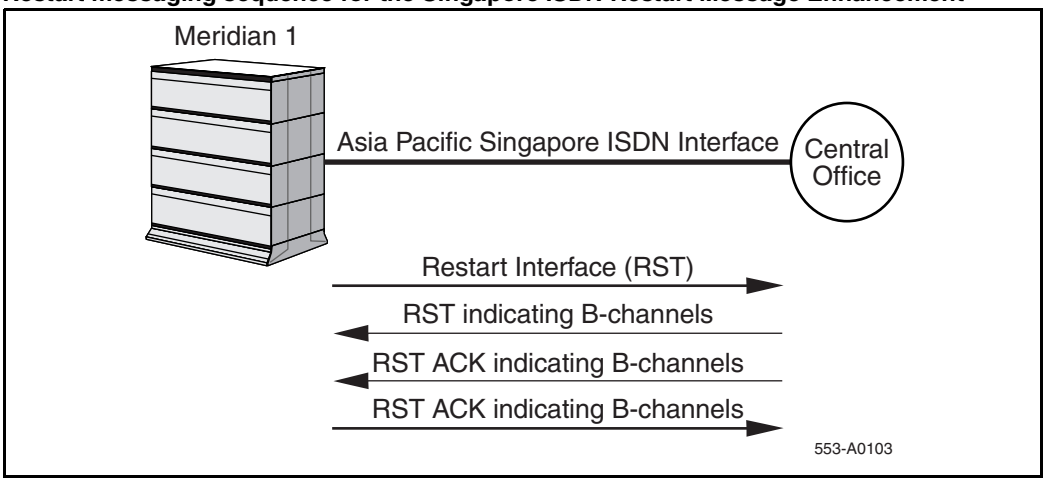
Meridian 1 Release 25.40 introduces the Singapore ISDN Restart Message Enhancement. This feature allows Meridian 1 systems with Asia Pacific-Singapore ISDN connectivity to recognize and process Restart Acknowledge messages sent from an Alternate Carrier's Nokia Central Office (CO) switch.

Note: The Alternate Carrier's Nokia CO must be located in Singapore.

With the Singapore ISDN Restart Message Enhancement, the Meridian 1 accepts an Indicated Channels Restart Acknowledge message from the CO. The Acknowledge message from the CO is in response to the Meridian 1 Single Interface Restart Message.

Figure 43 on page 308 shows the Restart messaging sequence between a Meridian 1 and a Nokia CO switch over the Asia-Pacific Singapore ISDN interface.

Figure 43
Restart messaging sequence for the Singapore ISDN Restart Message Enhancement



Operating parameters

There are no operating parameters associated with this feature.

Feature interactions

There are no feature interactions associated with this feature.

Feature packaging

There are no new packages associated with this feature.

Feature implementation

There are no specific implementation procedures associated with this feature.

Feature operation

There are no specific operating procedures associated with this feature.

Software Input/Output prompts

The following tables outline new information that will be added to the Software Input/Output Guides. The Numerical list of packages table lists new software packages.

Numerical list of packages

Number	Mnemonic	Name
384	ATAN	Attendant Announcement
385	NI-2 Name	NI-2 Name Display Supplementary Service
386	M3900_PROD_ENH	M3900 Phase III Productivity Enhancement
387	VIR_OFF_ENH	M3900 Phase III Virtual Office Enhancement
388	ACDE	ACD/DN Expansion
389	PONW	Priority Network Override

LD 10: Analog (500/2500) Telephone Administration

This Overlay program allows data blocks for the 500/2500, DTMF type telephones and Displayphone 1000/220 to be created or modified.

When the Overlay is loaded, the available system memory, disk records, and system configuration limits are output in a header as follows:

>ld 10

PBX000
MEM AVAIL: (U/P): xxxxxx USED U P: xxxxxx xxxxxx TOT: xxxxxx
DISK RECS AVAIL: xxx
TNS AVAIL: xxx USED: xxx TOT: xxx
ACD AGENTS AVAIL: xxx USED: xxx TOT: xxx
ANALOGUE TELEPHONES AVAIL: xxx USED: xxx TOT: xxx
AST AVAIL: xxx USED: xxx TOT: xxx
ANALOGUE TELEPHONES AVAIL : xxxxUSED: xx TOT: xxxx
AST AVAIL: xxxxUSED: XX TOT: xxxx
WIRELESS TELEPHONES AVAIL: xxxx USED: xx TOT: xxxx
WIRELESS VISITORS AVAIL: xxxx USED: xx TOT: xxxx
CLASS TELEPHONES AVAIL: xxxx USED: xx TOT: xxxx
DATA PORTS AVAIL: xxxx USED: xx TOT: xxxx
PHANTOM PORTS AVAIL: xxxx USED: xx TOT: xxxx

If an Incremental Software Management (ISM) limit is set to the maximum value 32767, then the information for that ISM will not be printed. This does not apply for the TNs ISM.

Alphabetical list of prompts LD 10

Prompt	Response	Comment
CLS	CLS	Class of Service options The following CLS assignments determine the calling options and features available to an analog telephone. Defaults are shown in parentheses. Enter each non-default option required, separated by a space.
	(FDSD) FDSA	Force Disconnect Denied Force Disconnect Allowed
	(NOVD) NOVA	Network Override/Breakin Denied Network Override/Breakin Allowed

LD 11 Prompts and responses

Prompt	Response	Comment
REQ:	...	
TYPE:	a...a	
...		
MLWU_LANG		
MLNG	a...a	Language selection for the M3902, M3903, M3904, or M3905. Where: a...a = <CR> no change. a...a = ENG, FRE, GER, DUT, SPA, ITA, NOR, SWE, DAN, POR, FIN, POL, CZE, HUN, JAP, RUS, LAT, TUR.

Alphabetical list of prompts LD 11

Prompt	Response	Comment
...		
CLS	CLS	Class of Service options The following CLS assignments determine the calling options and features available to the telephone. Defaults are shown in parentheses. Enter each non-default option required, separated by a space.
	(ELD) ELA	Erase lists Denied Erase lists Allowed
...		
	(FDSD) FDSA	Force Disconnect Denied Force Disconnect Allowed
	(NOVD) NOVA	Network Override/Breakin Denied Network Override/Breakin Allowed
KEY	xx aaa yyyy (cccc or D) zz..z	
	xx CLT	Configure Callers List key in context sensitive area. CLT/NUL are only options for key 27.
	xx FDIS	Force Disconnect Key
	xx PONW	Priority Override/Breakin Networkwide key
	xx RLT	Configure Redial List key in context sensitive area. RLT/NUL are only options for key 28.
...		
MLWU_LANG MLNG	a...a	Language selection for the M3902, M3903, M3904, or M3905 on Remote Office Where: a...a = <CR> no change a...a = ENG, FRE, GER, DUT, SPA, ITA, NOR, SWE, DAN, POR, FIN, POL, CZE, HUN, JAP, RUS, LAT, TUR

LD 15 Prompts and responses

Prompt	Response	Comment
REQ:	CHG	Change existing data block
TYPE	FTR_DATA	Customer Features and options
...		
FXS		
DFLT_LANG	a...a	Default language for M3900 on Remote Office Where: a...a = (ENG), FRE, GER, DUT, SPA, ITA, NOR, SWE, DAN, POR, FIN, POL, CZE, HUN, JAP, RUS, LAT, TUR.
...		
STS_MSG		
	(NO) YES	Modify Set-to-Set Messages
MSG1	a...a	Set-to-Set Message Where: a...a = <CR> keeps current message a...a = <text string> is the new message to be displayed (up to 24 characters)
MSG2	a...a	Set-to-Set Message Where: a...a = <CR> keeps current message a...a = <text string> is the new message to be displayed (up to 24 characters)
MSG3	a...a	Set-to-Set Message Where: a...a = <CR> keeps current message a...a = <text string> is the new message to be displayed (up to 24 characters)
MSG4	a...a	Set-to-Set Message Where: a...a = <CR> keeps current message a...a = <text string> is the new message to be displayed (up to 24 characters)

MSG5	a...a	Set-to-Set Message Where: a...a = <CR> keeps current message a...a = <text string> is the new message to be displayed (up to 24 characters)
MSG6	a...a	Set-to-Set Message Where: a...a = <CR> keeps current message a...a = <text string> is the new message to be displayed (up to 24 characters)
MSG7	a...a	Set-to-Set Message Where: a...a = <CR> keeps current message a...a = <text string> is the new message to be displayed (up to 24 characters)
MSG8	a...a	Set-to-Set Message Where: a...a = <CR> keeps current message a...a = <text string> is the new message to be displayed (up to 24 characters)
MSG9	a...a	Set-to-Set Message Where: a...a = <CR> keeps current message a...a = <text string> is the new message to be displayed (up to 24 characters)
MSG10	a...a	Set-to-Set Message Where: a...a = <CR> keeps current message a...a = <text string> is the new message to be displayed (up to 24 characters)
...		
OPT	a...a (BWTD) BWTA	Options Breakin Warning Tone Denied Breakin Warning Tone Allowed
VO_ALO	(NO) YES	Enable Virtual Office Automatic Logout.
VO_ALOHR	(0)-23	Virtual Office Automatic Logout time using 24 hour clock

Alphabetical list of prompts LD 15

Prompt	Response	Comment
DFLT_LANG	a...a	Default language for M3900 on Remote Office Where: a...a = (ENG), FRE, GER, DUT, SPA, ITA, NOR, SWE, DAN, POR, FIN, POL, CZE, HUN, JAP, RUS, LAT, or TUR.
MSG1	a...a	Set-to-Set Message Where: a...a = <CR> keeps current message a...a = <text string> is the new message to be displayed (up to 24 characters)
MSG2	a...a	Set-to-Set Message Where: a...a = <CR> keeps current message a...a = <text string> is the new message to be displayed (up to 24 characters)
MSG3	a...a	Set-to-Set Message Where: a...a = <CR> keeps current message a...a = <text string> is the new message to be displayed (up to 24 characters)
MSG4	a...a	Set-to-Set Message Where: a...a = <CR> keeps current message a...a = <text string> is the new message to be displayed (up to 24 characters)
MSG5	a...a	Set-to-Set Message Where: a...a = <CR> keeps current message a...a = <text string> is the new message to be displayed (up to 24 characters)

Prompt	Response	Comment
MSG6	a...a	Set-to-Set Message Where: a...a = <CR> keeps current message a...a = <text string> is the new message to be displayed (up to 24 characters)
MSG7	a...a	Set-to-Set Message Where: a...a = <CR> keeps current message a...a = <text string> is the new message to be displayed (up to 24 characters)
MSG8	a...a	Set-to-Set Message Where: a...a = <CR> keeps current message a...a = <text string> is the new message to be displayed (up to 24 characters)
MSG9	a...a	Set-to-Set Message Where: a...a = <CR> keeps current message a...a = <text string> is the new message to be displayed (up to 24 characters)
MSG10	a...a	Set-to-Set Message Where: a...a = <CR> keeps current message a...a = <text string> is the new message to be displayed (up to 24 characters)
OPT	aaa (BWTD) BWTA	Options Breakin Warning Tone Denied Breakin Warning Tone Allowed
STS_MSG	(NO) YES	Modify Set-to-Set Messages
VO_ALO	(NO) YES	Enable Virtual Office Automatic Logout.
VO_ALOHR	(0)-23	Virtual Office Automatic Logout time using 24 hour clock

LD 16 Prompts and responses

Prompt	Response	Comment
REQ	...	
TYPE	RDB	
...		
TKTP	a...a	Trunk Type
...		
ATAN		PC Attendant Announcement
	(NO) YES PSTN	Where: (NO) = No PC Attendant Announcement YES = Enable PC Attendant Announcement on this route. PSTN = Enable PC Attendant Announcement on this route on PSTN calls only (For MCDN trunks only).
- ATBL	0 -31	Announcement profile table Uses announcement profile AANN defined in Overlay 56
- AAT	(NO) YES	Disable Alternative PC Attendant Announcement. Enable Alternative PC Attendant Announcement.
--AATO	(0) - 3	Alternative PC Attendant Announcement Time of Day Option for this Route
--ADAY	(0) - 3	Alternative PC Attendant Announcement Day of Week Option for this Route
--AHOL	(0) - 3	Alternative PC Attendant Announcement Holiday Option for this Route
--AATB	0 - 31	Announce profile table Uses announcement profile AANN defined in Overlay 56
-AAAO		Alternative PC Attendant Announcement
	(NO) CAA CAF	Where: (NO) = No call answer is given CAA = Call answer will be given on announcement CAF = Call answer will be given forced This prompt is for tone announcement valid only.
RANH	0 - 128	RAN or Music route which will be used after post treatment Precede with x to remove

Prompt	Response	Comment
RCAP	QMWI	Add Message Waiting Indication as a remote capability. The encoding method uses Integer Values.
	QMWO	Add Message Waiting Indication as a remote capability. The encoding method uses Object Identifier.
	XQMW	Remove Message Waiting Indication.
		QMWI and QMWO are exclusive and may not be configured at the same time on the same link.
...		
MWTO	(15) - 30	Message Waiting Time-out timer in seconds This prompt is only printed if the RCAP is set to either QMWI or QMWO. The value entered is the duration of a timer started when a SETUP message is sent to set up a connection-oriented, call-independent connection for MWI transport. The timer is stopped on receipt of a CALL PROCEEDING message.
MWRT	0 - (2) - 15	Message Waiting Retry Timer This prompt is only printed if the RCAP is set to either QMWI or QMWO. The value entered is the number of re-tries to be effected after a SETUP timeout.
...		
ISDN	YES	
...		
- SDID	(NO) YES	Send DID number instead of internal DN.
		IDC table with SDID Yes must be configured
-- CTON		Calling Party Number
	(NCHG) UKWN INTL NATL LOCL	Call Type will not be changed. Unknown call type International call type National call type Subscriber call type

Alphabetical list of prompts LD 16

Prompt	Response	Comment
AAAO	(NO) CAA CAF	Alternative PC Attendant Announcement Where: (NO) = No call answer is given 0-31 CAA = Call answer will be given on announcement. CAF = Call answer will be given forced. This prompt is for tone announcement valid only.
AAT	(NO) YES	Disable Alternative PC Attendant Announcement. Enable Alternative PC Attendant Announcement.
AATO	(0) - 3	Alternative PC Attendant Announcement Time of Day Option for this Route
AATB	0 - 31	Announce profile table. Uses announcement profile AANN defined in Overlay 56
ADAY	(0) - 3	Alternative PC Attendant Announcement Day of Week Option for this Route
AHOL	(0) - 3	Alternative PC Attendant Announcement Holiday Option for this Route
ATAN	(NO) YES PSTN	PC Attendant Announcement Where: (NO) = No PC Attendant Announcement YES = Enable PC Attendant Announcement on this route. PSTN = Enable PC Attendant Announcement on this route on PSTN calls only (For MCDN trunks only). PC Attendant announcement is available on DID/TIE and COT trunks only.
ATBL	0 - 31	Announcement profile table Uses announcement profile AANN defined in Overlay 56.

Prompt	Response	Comment
CTON		Calling Party Number
	(NCHG) UKWN INTL NATL LOCL	Call Type will not be changed. Unknown call type International call type National call type Subscriber call type
MWTO	(15) - 30	This prompt is only printed if the RCAP is set to either QMWI or QMWO. The value entered (in seconds) is the duration of a timer started when a SETUP message is sent to set up a connection-oriented, call-independent connection for MWI transport. The timer is stopped on receipt of a CALL PROCEEDING message.
MWRT	0 - (2) - 15	This prompt is only printed if the RCAP is set to either QMWI or QMWO. The value entered is the number of retries to be effected after a SETUP time-out.
RANH	0 -128	RAN or Music route which will be used after post treatment Precede with x to remove.
RCAP	QMWI	Add Message Waiting Indication as a re-mote capability. The encoding method uses Integer Values.
	QMWO	Add Message Waiting Indication as a re-mote capability. The encoding method uses Object Identifier.
	XQMW	Remove Message Waiting Indication (using the Integer Values encoding method) as a remote capability. QMWI and QMWO are exclusive and may not be configured at the same time on the same link.
SDID	(NO) YES	Send DID number instead of internal DN. IDC table with SDID Yes must be configured

LD 17 Prompts and responses

Prompt	Response	Comment
REQ	CHG	Request
TYPE	ADAN	Action Device And Number
- ADAN	aaa bbb x	Action Device And Number (aaa = NEW, CHG, MOV or OUT; bbb = I/O device type; x = port number)
IFC	NI2	NI-2 TR-1268 Interface Type
BSRV	(NO) YES	B channel Service messaging
BSRC	1- (2) - 4	B channel Service Re-transmission Counter
...		
RCAP	NDS XNDS	NI-2 Name Display Option Remove NDS Option
	QMWI	Add Message Waiting Indication as a remote capability. The encoding method uses Integer Values.
	QMWO	Add Message Waiting Indication as a remote capability. The encoding method uses Object Identifier.
	XQMW	Remove Message Waiting Indication (using the Integer Values encoding method) as a remote capability.
		QMWI and QMWO are exclusive and may not be configured at the same time on the same link.
...		
MWTO	(15) - 30	This prompt is only printed if the RCAP is set to either QMWI or QMWO. The value entered (in seconds) is the duration of a timer started when a SETUP message is sent to set up a connection-oriented, call-independent connection for MWI transport. The timer is stopped on receipt of a CALL PROCEEDING message.
MWRT	0 - (2) - 15	This prompt is only printed if the RCAP is set to either QMWI or QMWO. The value entered is the number of re-tries to be effected after a SETUP timeout.

Alphabetical list of prompts LD 17

Prompt	Response	Comment
BSRV	(NO) YES	B channel Service messaging.
BSRC	1- (2) - 4	B channel Service Re-transmission Counter
MWTO	(15) - 30	This prompt is only printed if the RCAP is set to either QMWI or QMWO. The value entered (in seconds) is the duration of a timer started when a SETUP message is sent to set up a connection-oriented, call-independent connection for MWI transport. The timer is stopped on receipt of a CALL PROCEEDING message.
MWRT	0 - (2) - 15	This prompt is only printed if the RCAP is set to either QMWI or QMWO. The value entered is the number of re-tries to be effected after a SETUP timeout.
RCAP	NDS	NI-2 Name Display Option
	XNDS	Precede with x to remove.
	QMWI	Add Message Waiting Indication as a remote capability. The encoding method uses Integer Values.
	QMWO	Add Message Waiting Indication as a remote capability. The encoding method uses Object Identifier.
	XQMW	Remove Message Waiting Indication (using the Integer Values encoding method) as a remote capability. QMWI and QMWO are exclusive and may not be configured at the same time on the same link.
RLS	xx	Release ID of the switch at the far-end of the D-channel. This is the software release at the far-end. If the far-end has an incompatible release, it prevents the sending of application messages. Shown below is the relationship between the ISDN application, equipment and the Release ID or BCS at the far-end.

Application	Far-End	Minimum RLS
Network Ring Again	SL-1	12
	SL-100	26
	DMS-100/250	26
Network ACD	SL-1	15
	SL-100	29
Network Breakin and Force Disconnect		

Prompt	Response	Comment
		25 Network Message Service - Message Center SL-1 15 Network Message Service - Meridian Mail SL-1 16 Message Waiting Indication Interworking with DMS-100 SL-1 19 DMS-100 36 The Release ID information is required and supported for connection to Nortel Networks equipment only. For connections to AT&T ESS#4 and ESS#5, set RLS = 1.

Alphabetical list of prompts LD 39

Command	Description
DIS SCG x	Disable SCG card x (0 or 1). Not applicable for NTRB53 Clock Controller. Use LD 60 instead.
ENL SCG x	Enable SCG x (0 or 1). Not applicable for NTRB53 Clock Controller. Use LD 60 instead.
SCLK	Switch clock to other SCG. Functions with NTRB53 Clock Controller
STAT SCG x	Print status of SCG x (0 or 1). Prints normal status of NTRB53 (not full status)

LD 56 Prompts and responses

Prompt	Response	Comment
REQ	aaa	
TYPE	AANN	PC Attendant Announcement block.
CUST	xx	Customer Number
TBL	0-31	Announcement table number
-NIPR	(NO) YES	Nightstation announcement priority. If NIPR is set to YES, ANNS is given for each call to the nightstation.
-ANQU	(NO) YES	PC Attendant Announcement is given on calls in PC Attendant or night service queue only.
-ANAT	aaa	Announcement when terminating to the PC Attendant Where: aaa = R000 - R128 RAN announcement
-ANNS	aaa	Announcement when terminating to night station Where: aaa = R000 - R128 RAN announcement
-ANFA	aaa	Announcement when CFNA to PC Attendant Where: aaa = R000 - R128 RAN announcement
-ANFB	aaa	Announcement when CFB to PC Attendant Where: aaa = R000 - R128 RAN announcement
-ANSR	aaa	Announcement when slow answer recall Where: aaa = R000 - R128 RAN announcement
-ANXC	aaa	Announcement on calls extended by PC Attendant Where: aaa = R000 - R128 RAN announcement
-ANOF	aaa	Announcement on calls overflowed from the PC Attendant queue Where: aaa = R000 - R128 RAN announcement
SURV		Flexible Survival Warning Tone
- XTON		Flexible Survival Warning Tone Code
- XCAD		Flexible Survival Warning Tone Cadence number

Alphabetical list of prompts LD 56

Prompt	Response	Comment
ANAT	aaa	Announcement when terminating to the PC Attendant Where: • aaa = R000 - R128 announcement is given via RAN announcement
ANFA	aaa	Announcement when CFNA to PC Attendant Where: • aaa = R000 - R128 announcement is given via RAN announcement
ANFB	aaa	Announcement when CFB to PC Attendant Where: • aaa = R000 - R128 announcement is given via RAN announcement
ANNS	aaa	Announcement when terminating to night station Where: • aaa = R000 - R128 announcement is given via RAN announcement
ANOF	aaa	Announcement on calls overflowed from the PC Attendant queue. Where: • aaa = R000 - R128 announcement is given via RAN announcement
ANQU	(NO) YES	PC Attendant Announcement is given on calls in PC Attendant or night service queue only.
ANSR	aaa	Announcement when slow answer recall Where: • aaa = R000 - R128 announcement is given via RAN announcement
ANXC	aaa	Announcement on calls extended by PC Attendant Where: • aaa = R000 - R128 announcement is given via RAN announcement
NIPR	(NO) YES	Nightstation announcement priority. If NIPR is set to YES, ANNS is given for each call to the nightstation.
TBL	0-31	Announcement table number
SURV		Flexible Survival Warning Tone
- XTON		Flexible Survival Warning Tone Code
- XCAD		Flexible Survival Warning Tone Cadence number

LD 57 Prompts and responses

Prompt	Response	Comment
REQ	aaa	
TYPE	FFC	
CUST	xx	
...		
CODE	FDIS	FFC Type
FDIS	xxxx	FDIS code
CODE	PONW	FFC TYPE
PONW	xxxx	PONW code

Alphabetical list of prompts LD 57

Prompt	Response	Comment
CODE	aaaa	Specific Flexible Feature Code (FFC) type. Where: aaa = FFC type to be changed. (e.g., AUTH, CPP, etc.) Two entries are required to change a specific FFC. First enter the mnemonic of the FFC to be changed and then carriage return <cr>. The switch will then prompt the mnemonic just entered. Respond to this second prompt by entering the numeric value desired for that Flexible Feature Code. See example below. The Flexible Feature Code may be up to 4 digits, or up to 7 digits with Directory Number Expansion (DNXP) package (150). CODE is prompted when ALL = NO. Example: to change the Flexible Feature Code for Call Park to 88, respond to CODE as follows: PromptResponse CODE CPRK <cr> CPRK88 <cr> CODE <cr> (No further prompts, return to REQ)
	ALL	All feature mnemonics that may have a Flexible Feature Code will be prompted.
	FDIS	Forced Disconnect
	PONW	Priority Override/Breakin Network wide Key
	<cr>	No further prompts, return to REQ
FDIS	xxxx	Force Disconnect code
PONW	xxxx	Priority Override/Breakin Network wide code

LD 60 Prompts and responses

Command	Description
ENL CC x **<fdl>**	Enable system clock controller x Where: x = 0 or 1. fdl = Force DownLoad for the NTRB53 card with Release 25.40 and later.
IDC x	Get card ID of Clock Controller card in side x.
RST CC x	Reset side x of the Downloadable Clock Controller.
SEFT CC x	Execute a self test on side x of the Downloadable Clock Controller.
SSCK x **<full>**	Get status of system clock x Where: x = 0 or 1. full = Get full status of clock in side x, including serial number and loadware versions and states.

Alphabetical list of prompts LD 60

Command	Description
ENL CC x **<fdl>**	Enable system clock controller Where: x = 0, Call Server clock. x = 1, 2, 3, 4, IP Media Gateway
IDC x	Get card ID of Clock Controller card in side x. Where x = 0 or 1.
RST CC x	Reset side x of the Downloadable Clock Controller. Where x = 0 or 1.
SEFT CC x	Execute a self test on side x of the Downloadable Clock Controller. Where x = 0 or 1.
SSCK x **<full>**	Get status of system clock. Where: x = 0 or 1. full = Get full status of clock in side x, including serial number and loadware versions and states. The SSCK command indicates the active controller as well as active primary or secondary reference clock source or free run.

Response may be:

1. AUTO SWREF CLK - ENBL = automatic switchover of system clocks enabled
2. AUTO SWREF CLK - DSBL = automatic switchover of system clocks disabled
3. CLOCK ACTIVE = the active controller
4. DSBL = clock disabled
5. ENBL = clock enabled
6. REF CLK ERR = possible faulty cable from CC to DTI/PRI, or faulty Clock Controller
7. SYSTEM CLOCK - FREE RUN, PREF or SREF = clock is in free run mode or tracking to the primary (PREF) or secondary (SREF) reference loop
8. VCXO AGING ERROR = the timing crystal is faulty, replace the clock

- x = 0, Call Server clock
- x = 1, 2, 3, 4, Media Gateway

Call Server example

```
.ssck 0
DSBL
PLL1 DSBL
PLL2 DSBL
CABINET CLK SRC: CC
```

Media Gateway example

```
.ssck 1
DSBL
IPDB1 LOCKED
CABINET CLK SRC: IPDB
```

Port 2, 4 Phase Locked Loop (PLL) status can be DSBL, LOCKING, or LOCKED.
Cabinet clock source can be PLL or CC.

Alphabetical list of prompts LD 81

Prompt	Response	Comment
FEAT	FEAT	Features requested Enter a specific feature mnemonic or one the following for groups of features: ALL, COS, DNK, SETS, SCL, RNP or 500. FEAT is repeated until <cr> is entered.
	CLT	Callers List key
	ELA ELD	Erase Lists Allowed Erase Lists Denied
	MLNG	Language Selection
	RLT	Redial List key
MLNG	a...a	To print sets with a language selection matching the language in the response to the MLNG prompt. Where: a...a = ENG, FRE, GER, DUT, SPA, ITA, NOR, SWE, DAN, POR, FIN, POL, CZE, HUN, JAP, RUS, LAT, TUR.

Alphabetical list of Administration commands LD 117

Command	Response	Comment
CHG AUTONEG IPM <port> <ON or OFF>		Enable or Disable the auto-negotiation feature for the specified port. Given by the IPM parameter, the ports are those on the Call Server. Where: <port> = 1 to 4
CHG AUTONEG IPR <port> <ON or OFF>		Enable or Disable the auto-negotiation feature for the specified port. Given by the IPR parameter, the ports are those on the Media Gateway. Where: <port> = 1 to 4
STAT AUTONEG IPM		This command will give the status of the Link Partner data port setting. The Link Partner port is the data port the Meridian equipment is connected to. Given the IPM parameter, the status is for those ports on the Call Server. See the sample output below for interpretation of the STAT command.

Sample Output:

```
AUTO-NEGOTIATE LINK PARTNER STATUS -
MAIN/CALL SERVER PORTS
-------------------------------------------------------------
PORT Bandwidth Duplex Mode AutoNegotiate
=================================

IPM 1 UNKNOWN UNKNOWN      ON
IPM 2 UNKNOWN UNKNOWN      -
IPM 3 100 Mbps full duplex  ON
IPM 4 UNKNOWN UNKNOWN      -
```

Where: UNKNOWN indicates that either the port is not set at 100Mbps full duplex or the status of the data port is unknown at this time. In either case, the technician needs to verify that the data equipment is passing data at the rate of 100Mbps full duplex or be sure to turn on the AUTO-NEGOTIATION feature and verify that 100Mbps full duplex is successfully negotiated.

"100 Mbps full duplex" indicates that the data equipment port is passing a data rate of 100Mbps full duplex.

STAT AUTONEG IPR

Get the status of the Link Partner data port setting. The Link Partner port is the data port the Meridian equipment is connected to. Given the IPR parameter, the status is for those ports on the EXPANSION (Media Gateway) cabinet.

Sample Output:

```
AUTO-NEGOTIATE LINK PARTNER STATUS -
EXPANSION/MEDIA GATEWAY PORTS
-------------------------------------------------------------
PORT Bandwidth Duplex Mode AutoNegotiate
=================================

IPR 1 UNKNOWN UNKNOWN      ON
IPR 2 UNKNOWN UNKNOWN      -
IPR 3 100 Mbps full duplex  ON
IPR 4 UNKNOWN UNKNOWN      -
```

See command STAT AUTONEG IPM for definition of UNKNOWN

System Messages

The following messages will be added to *System Messages* (553-3001-411) Guide.

AMH: Auxiliary Message Handler

AMH0012 MAX using protocol <=.RLS23_PROTOCOL cannot support reporting for more than 240 queues. The number of queues with RPRT = Yes exceeds this limit of 240.

AUD: Software Audit

AUD0091 Audit has found that Zone bandwidth does not match actual usage. Zone information has been updated to actual value.

AUD0092 Procedure VTRK_OBT_AUDIT: ACTIVECR field in the unprotected virtual trunk block is nil, but a TDS is allocated for the out-of-band tone. The tone is removed.

BUG: Software Error Monitor

BUG0081 The number of Survivable Cabinets configured in the system has reached the limit.

BUG0088 The DCS set is in a locked-out state.

BUG0089 'VNS has entered a recursive loop which would result in stack overflow.

REQUEST_OUTPUT calls VNS to send a message on the VNS bearer. Eventually VNS calls REQUEST_OUTPUT to actually send the message. Every time the channel number passes, it looks as if a VNS D-channel message is being

sent. Hence, it tries to send another message on the VNS bearer and again the same problem happens. This goes on recursively until the stack overflow occurs. To prevent INI, the recursive loop has been broken (or stopped).

The following values are printed along with the BUG:

Timestamp

ORIGN, TERTN

VNS_TER_INDEX

MSGCRPTR

MSG_CRPTR, VNS_INDEX

Action: Contact your technical support group. Report the problem and advise them of the parameters output.

BUG0091 Wireless Visitors ISM counter corruption encountered. Counter is reset to 0.

Action: Contact your technical support group.

BUG0093 The code for executing the CLKC card related command in Overlay 39 or 60 received a failure return code from SET_MSDLMISP_PTR.

Action: Check for CLKC database corruption in MSDL related structure.

BUG0094 Either Overlay 39, or Overlay 60, is waiting for a message from the CLKC, but the response pending field suddenly clears. The response pending field indicates that a software entity is waiting for a message from the MSDL/MISP interface which is used by the CLKC card.

BUG0097 Buffer did not empty.

BUG0098 C R The route number (RNO) passed into Procedure $SET_ROUTE_PTRS is out of range.

C = Customer Number

R = Route Number

Action: Investigate possible data corruption.

BUG0099 Invalid channel number input for converting into slotmap.

BUG2029 xxx. Incoming message disregarded due to version y compatible with current version z.

BUG2107 <HB> Cannot allocate memory for semaphore on cabinet xx.

BUG2108 <HB> Cannot start watchdog on cabinet xx.

BUG2110 <HB> Cannot get IP addresses on cabinet xx.

BUG2112 <HB> Cannot start polling mechanism between the main cabinet and the expansion cabinet x.

BUG6506 <qmwi error no.><parm1><parm2> Error in message waiting supplementary service.

Action: Contact your technical support group.

CCED: Common Core Equipment

CCED0019 Cannot join: the local and remote software versions, or memory sizes, are different.

CCED0223 Cannot SPCU: Local and Remote Flash ROMs mismatch; if a SCPU or STAT CPU fails on a non-CPP.

CCED0224 LOCAL LED Test failed.

CCED0225 REMOTE LED Test failed.

CCED1011 Operation is applicable only on the active side.

CLKC: Clock Controller

CLKC0001 This vintage of clock controller hardware does not support the FDL option.

CLKC0002 Warning: This vintage of clock controller hardware does not support the FULL option.

CLKC0003 Invalid RST CC command for this vintage of clock controller hardware. This command is only supported for the CLKC card.

CLKC0004 Invalid SEFT CC command for this vintage of clock controller hardware. This command is only supported for the CLKC card.

CLKC0005 Invalid IDC command for this vintage of clock controller hardware. This command is only supported for the CLKC card.

CLKC0006 CLKC card is not operational. Cannot read IDC information.

Action: Enable the card and try again.

CLKC0007 CLKC card is not operational. Cannot read full status from the card.

Action: Enable the card and try again.

CLKC0008 The command entered required that information be read from or write to a CLKC card. The specified CLKC card is not present in the system, or the (address) switch settings do not agree with the database.

CLKC0009 Cannot reset (or execute self-tests) on the card right now since the device enabled bit is set, meaning a message response is currently pending.

Action: Attempt the self test command again; when the response pending condition clears, as long as the card is Manually Disabled, the reset (and self tests) should execute.

CLKC0010 Cannot reset (or execute self tests) on the card because the card is not in manually disabled state.

Action: Enable the card and try again.

CLKC0011 Time out waiting for the self tests to complete.

Action: Wait at least five minutes, then try again. Under certain unusual circumstances, self tests can take approximately five minutes; however, this should only occur when the flash EPROM on the card is new of has been completely erased.

CLKC0012 The CLKC card was removed from its slot, or the card reset itself during the self-tests.

Action: If the card was removed, execute the self-tests again and do not remove the card from its slot until the tests are complete. If the card was not removed, execute the self-tests again. If this message appears more than twice, replace the CLKC card.

CLKC0013 MSDL functionality for CLKC (NTRB53) card did not get disabled.

CLKC0015 The number of parameters for the Clock Controller command is incorrect.

CLKC0016 The card number in the command is out-of-range or invalid.

CLKC0017 "Cannot enable the card unless it is in Manually Disabled (MAN DSBL) state."

CLKC0018 Cannot disable card unless it is in the Enabled (ENBL) state.

CLKC0019 No response received to the enable card command.

CLKC0020 "The response message from the card to the Overlay indicates failure to enable/disable."

CLKC0021 No response received to the disable card command. The card is set to the Manually Disabled (MAN DSBL) state anyway.

CLKC0022 "The command entered requires that a message be sent to the CLKC card. The Meridian 1 was unable to build the message since the buffer was not free. Try again later. If this message continues to be generated, continue with the Action."

Action: If the card is enabled, wait for a few minutes, as the card may have encountered a problem that warrants recovery, or if the card is manually disabled, reset the card using the RST CC x command in OVL 60, or execute self tests using the SEFT CC x command in OVL60.

CLKC0023 Failed enable attempt. If this message is not accompanied by any other error message, the card may be in the process of performing self-tests or the self-tests may have already failed.

Action: Wait a few minutes, then execute the self-tests with the SLFT MSDL x command. If self-tests pass, try to enable the card again.

CLKC0024 The fourth parameter of the command is unrecognized or unimplemented.

CLKC0025 Began to download the CLKC basecode but stopped before finishing. There should be an accompanying SDL error message, so refer to the information on that message for the failure reason.

CLKC0026 "Cannot enable the card because it is not present in the system.

Action: If the card in question is believed to be present, check if the switch settings on the card agree with the device number entered in this command."

CLKC0027 Unable to allocate data space for CLKC related MSDL structure.

CLKC0028 Bank 0 of the CLKC loadware is used for the Clock Controller card.

ERR: Error Monitor

ERR0007 tn The language selection download has been rejected by the M3900 set. The language set on the terminal does not support the desired language.

Action: Download a new language set to the terminal, or accept the default language on the set."

ERR0008 tn1 tn2 Call drop due to IPTN failure.
TN1 = PTN
TN2 = VTN

ERR0009 There is no VTN corresponding to the DMC index.

ERR5525 Parsing of name information received.

ERR5575 tn The M3900 set has firmware that cannot use some Phase 3 features.

Action: Upgrade the firmware of the set on that TN.

ERR5576 ERR5575 is suppressed

Action: If necessary, use the MIDN command in LD 135 to run the daily routine. The message turns on automatically during the daily routine.

HWI: Hardware Infrastructure Maintenance

HWI0927 ETH: Can't create itgHealthUpdate task.

HWI0928 ETH: Can't start itgHealthUpdate task: JobId = x

IOD: Input/Output Diagnostic (LD37)

IOD0372 LSECDR: File xx is available on expansion yy.

Where:
xx = c:/u/smp.db/dba.cdr or b:/dba.cdr
yy = 1 to 4

ISR: Intergroup Switch and System Clock Generator Diagnostic (LD39)

ISR0005 WARNING: FDL Command is not supported on the clock controller equipped in the system. However, the system will continue to process the enable clock command.

NPR: Network and Peripheral Equipment Diagnostic (LD32)

NPR0034 DISU command is blocked because the unit being disabled is experiencing a flash download.

NPR0035 The flash download for the following TN is terminated due to the 'disable command'.

Action: The flash download for the affected TN might need to be reactivated after the unit is enabled.

NWS: Network and Signalling

NWS0001 The flash download for the following TN is terminated due to the ’disable command’. It may need to be redone after the TN is enabled.

SCH: Service Change

SCH0843 NDS valid only for NI-2 interface.

SCH0844 NI-2 name display package not equipped.

SCH1425 The CLT or RLT mnemonic can only be used on the M3903, M3904 or M3905 terminals.

SCH1426 Default CLT or RLT key has been deleted as a same function key was configured on a Programmable Feature Key.

SCH1427 Predefined set-to-set message file for the selected language cannot be loaded from the disk.

Action: Select another language and report the problem to the vendor.

SCH1428 On the M3903, M3904 and M3905, key 27 is reserved for the CLT mnemonics. No other mnemonic except NUL can be configured on that key.

SCH1429 On the M3903, M3904 and M3905 key 28 is reserved for the RLT mnemonic. No other mnemonic except NUL can be configured on that key.

SCH1430 The route must have an IDC table associated when SDID is enabled.

SCH1431 The M3900 Phase III Virtual Office Enhancement package is not equipped.

SCH1432 The M3900 Phase III Productivity Enhancement package is not equipped.

SCH1433 SCB cannot be configured when the number of queues with RPRT = Yes exceeds 240. ADS cannot be configured when RPRT = Yes exceeds 240 and MAX is using a protocol <=.RLS23_PROTOCOL.

SCH1434 RPRT cannot be made Yes for more than 240 queues if:

a) SCB is configured

b) ADS is configured and MAX is using a protocol <=.RLS23_PROTOCOL.

SCH1440 The CLT or RLT key can only be configured on the main terminal, not on a DBA or KBA.

SCH1433 SCB cannot be configured when the number of queues with RPRT = Yes exceeds 240. ADS cannot be configured when RPRT = Yes exceeds 240 and MAX is using a protocol <=.RLS23_PROTOCOL.

SCH1435 RPRT cannot be made Yes when both ADS and SCB are configured and the total number of queues with RPRT = Yes is already equal to 240. One of the blocks has to be removed.

Action: Out ADS if C- Report is required. Out SCB if MAX reporting is required.

SCH1436 Key PONW/FDIS cannot be configured when CLS (nova/fdsa) is denied.

Action: Configure CLS.

SCH1437 PONW_PACKAGE is restricted. CLS is not allowed.

Action: Enable the package.

SCH1438 The number of Wireless Visitors in the system exceeds the maximum number of Wireless Visitors defined in the ISM parameters.

SCH1439 l s c u The set at this TN is a Digital Cordless Set. The MC32 package (350) is restricted. Digital Cordless Sets required the MC32 package. The data block for this set is not loaded.

Action: Reload with package enabled, or with a database not containing DCSs.

SCH1440 The CLT or RLT key can only be configured on the main terminal, not on a DBA or KBA.

SCH1441 Missing software for CLKC card (NTRB53) on disk.

Action: Contact your technical support group.

SCH1442 XTRK type does not match the TN entered. The TN has to be in a Virtual Loop for VTRK.

SCH1443 The SPDC card is not supported in small systems.

Action: Use DHCI instead.

SCH1887 Attempt to configure QMWI when QMWO is already configured (or vice versa).

Action: Remove the existing MWI RCAP first.

SCH1888 "QMWI/QMWO response to RCAP is not allowed for interfaces other than ESGF, ISGF or EGF4."

SCH1889 Attempt to configure QMWI/QMWO when MQC FEAT NMS is configured or vice-versa.

Action: Remove either of the above.

SCH8796 SAR data does not exist.

SDL: Peripheral Software Download

SDL2115 t tn Three attempts to recover Flash download failed.

- t - set type (3902, 3903, 3904 or 3905

tn - TN of the set in (l s c u) or (s u)

Action: Force download flash firmware to specified set manually.

SDL2116 t tn Flash download failed during download recovery.

- t set type (3902, 3903, 3904 or 3905)

tn - TN of the set in (l s c u) or (s u)

Action: Force download flash firmware to specified set, manually.

SRPT: System Reports

SRPT0016 OMM: IP link is DOWN between cab <#> and cab <#>. SRPT0018 LCS: Graceful switchover not executed. Local health is better than remote health.

SRPT0018 LCS: Graceful switchover not executed. Local health is better than remote health.

SRPT0019 LCS: redundancy state changed from %s to %s.

SRPT0020 LCS: Active state changed from %s to %s.

SRPT0021 LCS: HSP state changed from %s to %s.

SRPT0022	Disk Redundancy: Disk sync %d%% complete.
SRPT0023	CPM: CPM completed protected memory sync.
SRPT0024	CPM: CPM started protected memory sync.
SRPT0025	CPM received stop update message from LCS.
SRPT0026	HB: remote side health change. %d.
SRPT0027	HB: HSP is DOWN.
SRPT0029	Disk Partition: all partitions successfully initialized.
SRPT0030	Disk Partition: format request received.
SRPT0031	Disk Redundancy: errors found and fixed during check disk.
SRPT0032	Disk Redundancy: Master received Start Sync, will go to Slave.
SRPT0033	Disk Redundancy: Master is starting disk sync.
SRPT0034	LCS: Join command not valid in %s state.
SRPT0035	LCS: Cutover command no valid in %s state.
SRPT0036	LCS: Graceful switchover command not valid on %s state.
SRPT0037	LCS: Split command not valid in %s state.
SRPT0038	LCS: Split command successful.
SRPT0039	LCS: Join command successful.
SRPT0040	LCS: Cutover command successful.
SRPT0041	LCS: Graceful switchover command successful.
SRPT0042	LCS: Graceful switchover cannot proceed.
SRPT0043	LCS: Protected memory and disk synchronization complete.
SRPT0044	LCS: Join denied. Incompatible software releases. Both sides must have the same release installed.
SRPT0045	LCS: My disk is in inconsistent state. I temporarily set disk state to split.

SRPT0046 LCS: Cannot join NOW. The active U disk has bad image.

Action: Try CUTOVR first.

SRPT0047 Disk Redundancy: Master asked to stop disk sync.

SRPT0048 Disk Redundancy: Master asked to stop updates and flush file system.

SRPT0049 Disk Redundancy: Master asked to stop updates.

SRPT0050 Disk Redundancy: Disk sync completed.

SRPT0051 PDT: PDT passwords set to default.

SRPT0052 PDT: Could not PDT password file.

Action: Try to reset the PDT passwords using the PASSWD command.

If the PASSWD command fails or cannot be executed then:

- for an Option 11C enable the magic switch. Enter PDT using the systems SECURITY ID. Enter the PASSWD command and use the SECURITY ID as the old PDT Level 2 Password.

- for all other systems, enter the install disk in the floppy drive off the active core. Enter PDT using the system TAPE ID. Enter the PASSWD command and use the TAPE ID as the old PDT Level 2 Password.

SRPT0053 PDT: Could not save PDT passwords.

Action: Try to reset the PDT passwords using the PASSWD command. If the PASSWD command fails or cannot be executed then:

- for an Option 11C enable the magic switch. Enter PDT using the systems SECURITY ID. Enter the PASSWD command and use the SECURITY ID as the old PDT Level 2 Password.

- for all other systems, enter the install disk in the floppy drive of the active core. Enter PDT using the systems TAPE ID. Enter the PASSD command and use the TAPE ID as the old PDT Level 2 Password.

SRPT0054 PDT: Passwords cannot be changed from a remote cabinet.

SRPT0055 PDT: Password changes have been stored.

SRPT0056 PDT: Passwords can only be changed from the active side.

Action: Check the cores state using LD 135 stat CPU. Ensure the core is the active core. Try to change the passwords using the PASSWD command again.

SRPT0057 PDT: Problem detected with password synchronize.

Action: For an Option 11C, check the connection between the main cabinet and remote cabinets. Ensure that the main cabinet and remote cabinets have completed their boot cycle. Try to change the passwords using the PASSWD command again. If this fails contact your technical support group.

For Thor systems, check that both cores are available, synchronized and are joined. Try to change the passwords using the PASWD command again. If this fails contact your technical support group.

For CPP systems, check that the HSP is up, the systems joined and the disk are synchronized. Try to change the passwords using the PASSWD command. If this fails contact your technical support group.

SRPT0058 PDT: Corrupt password detected.

Action: Try to reset the PDT passwords using the PASSWD command.

If the PASSWD command fails or cannot be executed then:

- for an Option 11C enable the magic switch. Enter PDT using the systems SECURITY ID. Enter the PASSWD command and use the SECURITY ID as the old PDT Level 2 Password. If this fails contact your technical support group.

- for all other systems, enter the install disk in the floppy drive of the active core. Enter PDT using the systems TAPE ID. Enter the PASSWD command and use the TAPE ID as the old PDT Level 2 Password. If this fails contact your technical support group.

SRPT0059 PDT: Invalid password entered.

SRPT0060 PDT: Unexpected error occurred during PDT password changes.

Action: Try to change the passwords again using the PASSWD command.

If the PASSWD command fails or cannot be executed then:

- for an Option 11C enable the magic switch. Enter PDT using the systems SECURITY ID. Enter the PASSWD command and use the SECURITY ID as the old PDT 2 Level Password. If this fails contact your technical support group.

- for all other systems, enter the install disk in the floppy drive of the active core. Enter PDT using the systems TAPE ID. Enter the PASSWD command and use the TAPE ID as the old PDT Level 2 Password.

If this fails contact your technical support group.

SRPT0061 LCS: JOIN denied. Incompatible memory sizes.

Action: Install the same memory in both sides.

SRPT0064 FBF: Failed to run FBF task because %s at %s.No. of Restarts = %d.

Action: Contact your technical support group.

SRTP0065 FBF: FBF could not receive message because %s

Action: Contact your technical support group.

SRTP0066 FBF: Could not process incoming message for application ID %d because %s

Action: Contact your technical support group.

SRTP0067 FBF: Unable to send message to the other side because %s Intended Message destination is = %d.

Action: Contact your technical support group.

SRTP0068 FBF: Could not send [%s] file to the remote node for %s Application because %s (error no = 0x%x). Problem occurred while sending message type %d.

Action: Contact your technical support group

SRTP0069 FBF: Unable to receive the complete file(s) [%s] from the remote node because%s (error no. = 0x%x). Problem occurred on receiving %d message type.

Action: Contact your technical support group

SRTP0070 IISM: Could not reset file [%s] because %s fd = %d, Error Number = %d.

Action: Contact your technical support group

SRTP0071 IISM: IISM could not be initialized because %s Dir. pointer for [%s] is 0x%x,File Desc. for file [%s] is %d and open error number is 0x%x.

Action: Contact your technical support group

SRTP0072 IISM: Retransmission limit reached for file [%s]. File size acknowledged by the remote node = %d.

Action: Contact your technical support group

SRTP0074 IISM: IISM could not send the message to the remote node because %s

Action: Contact your technical support group

SRTP0075 IISM: IISM failed to move all files. Some files may not have been copied properly. This is critical. Repeating the operation in ovl 143 may resolve this.

Action: Contact your technical support group

SRTP0076 FBF: Failed to initialize FBF because %s FBF task ID = 0x%x and Application = %s.

Action: Contact your technical support group

SRTP0078 IISM: Unable to %s [%s] file for error = 0x%x.

Action: Contact your technical support group

SRTP0079 IISM: File transfer failed. Retry. FBF failed to send file for App ID %d parameter = %d, srcFile = [%s], tarFile = [%s].

Action: Contact your technical support group

SRTP0080 ISM: Operation on [%s] file failed because %s Error Number = 0x%x, action = %d, parm = %d, write value = %d, file size = %d.

Action: Contact your technical support group

SRTP0081 IISM: Could not copy the file from [%s], fd = %d, to [%s], fd = %d. Error Num. = %d.

Action: Contact your technical support group

SRTP0082 FBF: Checksum failed for file [%s] because %s Errno = %d.

Action: Contact your technical support group

SRTP0083 IISM: LCS could not send IISM Sync. message. CM primary link may be down.

Action: Contact your technical support group

SYS: System Loader

SYS0074 Predefined set-to-set messages for the selected language cannot be loaded from the disk.

Action: Select another language and report the problem to the vendor.

SYS0075 Unable to allocate protected memory for predefined set-to-set messages.

Action: Contact your technical support group.

SYS0076 Either the Set-to-Set message package, or the M3900 Phase III Productivity Enhancement package is not equipped.

Action: Turn on package 380 or 386 if the feature is required.

SYS0077 The customer data block number read from the tape record header, was found to be greater than the customer pointer array size.

Action: Contact your technical support group.

SYS0078 An STS_MSG data structure was loaded from tape, but a corresponding customer data block to reference this structure does not exist.

Action: Contact your technical support group.

SYS0107 An STS_MSG data structure was loaded from tape, but the STS_MSG data block does not exist for the corresponding customer.

Action: Contact your technical support group.

SYS0108 Fatal error ACDE_Package has been disabled. Only 240 queues can be loaded.

Action: Load the switch with the default database of 240 ACD DNs/CDNs or enable ACDE_PKG.

SYS0109 The number of Wireless Visitors exceeds the Wireless Visitors limit and no further Wireless Visitors can be sysloaded.

Action: Contact your technical support group.

SYS0111 Unable to allocate protected MSDL/MISP block for CLKC.

SYS0112 CLKC index out-of-range (238-239).

SYS0113 Unable to allocate protected space for CLKC P_MSDLMISP_PTR.

SYS0114 Unable to allocate protected space for CLKC P_SID_BLK_PTR.

SYS0115 Unable to allocate space for CLKC Physical IO Block.

Meridian 1

What's New for Meridian 1

Copyright © 2002 Nortel Networks
All Rights Reserved
Information is subject to change without notice. Nortel Networks reserves the right to make changes in design or components as progress in engineering and manufacturing may warrant. This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC rules, and the radio interference regulations of Industry Canada. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.
Meridian 1 is a trademark of Nortel Networks.
Publication number: 553-3001-015
Document release: Standard 1.00
Date: January 2002
Printed in Canada

NORTEL NETWORKS™